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Elearning in the 'perfect storm' of Africa

By John Wilcox

Technology correspondent Jon Wilcox discovers that a lack of hardware, infrastructure, internet speed, and even access to mains electricity in Africa has meant creative elearning and mlearning solutions to seemingly insurmountable problems.

Whilst elearning and the use of virtual environments within companies continues to try to come to a level of standardisation (something that isn't expected for several years to come according to experts at the recently held Apply Serious Games summit) the implementation of such systems has a reach much further than the meeting rooms of the so-called 'Western World'. Traditionally endemic problems with communication across huge chunks of the developing world, such as Africa, are receding as the advent of mobile technology has helped to link communities. As such, devices like mobile phones are increasingly being used as ways to jump the geographical distances, offering learning support and solutions in multiple sectors as diverse as education and agriculture.

elearning Africa summit

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The end of May saw the fourth elearning Africa summit take place in Senegal. Offering a range of themes from elearning in the SME and corporate sectors, to the process of designing elearning systems in the first place, the summit also held a debate on how technology can impact education in Africa. The debate was co-chaired by Dr Harold Elletson, a former Conservative MP and founder of 'The New Security Foundaton', who spoke about the crux of the debate: "Some people think that technology is a powerful goal in its own right and that simply introducing technological innovation will have a beneficial effect on education across the African continent. Others think that technology can only be part of a wider solution and a concentration on technological change can lead to a failure to develop other, more basic infrastructure."

The importance of the web as an elearning tool for Africa strengthened further at the summit, with an announcement by the WorldWideWeb Consortium (the organisation tasked with developing and maintaining standards on the web) that it was opening its 17th global office - and first in West Africa. It seems that the web, elearning, and

mobile technologies really are coming to the fore in a continent that has in the past been negatively represented in the news media. So how is elearning and so-called 'mlearning' (mobile learning) being utilised in Africa? Obviously this is a simple question with a complex answer, so let's take a look at a couple of examples:

Moodle, with a twist

The TEDECO (Technology for Development and Cooperation) Group, based in Universidad Politecnica de Madrid's School of Computing, has been working on adapting the open-source elearning software programme Moodle, in conjunction with the University of Ngozi, Burundi. Over 50,000 sites utilise the Australian-developed solution around the globe (the Open University fully implemented the system in 2007), though the team in Madrid has had to flip the Moodle roll-out in light of one very important issue. Reporting on the latest stage of collaboration between the two educational institutes in December 2008, Science Centric outlined the issue facing TEDECO: "Students do not have a computer at home (where there is often no electricity) and have to attend a teaching institution, where there may be computers, but there is not always a teacher." Whereas Moodle is traditionally used by educators to develop and craft online courses, which are then distributed over the net to students, TEDECO's solution is for students to receive training from a local computer, linked remotely to a teacher. In 2007, the Spanish institute used satellite technology to enable internet communications within the University of Ngozi, enabling the second phase – the adaptation of Moodle – to begin the following year.

Slow moving traffic on the internet highway

A further issue to contend with in the developing world is average bandwidth speeds of the internet access (brace yourself for a little tech speak). According to internet access speed website, Speedtest.net, Africa has the lowest average speeds of all the continents (Antarctica is obviously an exception – though given the scientific research stations there, it probably has good satellite connectivity), with an average of 1.1Mbps. To put that into context, that compares to a little over 6Mbps in Europe. Looking across the continent, the difference between speeds is even more pronounced, with Morocco and South Africa topping the speed tests at 1.69Mbps and 1.61Mbps respectively, compared with 0.22Mbps in Ethiopia.

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These figures may be a little confusing, but they do seem to put internet speeds across Africa into a negative light. It's also worth pointing out that the UK doesn't make Speedtest.net's top 10 fastest internet speed list in Europe, despite its average speed of 4Mbps. Perhaps that's another reason why the government's Digital Britain report has been accused of not going far enough by some! Even in the United States (which has an average download speed of 6Mbps), some states have recorded woefully slow average speeds thanks to the continued use of dial-up internet connection; Idaho, Wyoming, and Montana all have average net speeds of 1.3Mbps, whilst Alaska lags (literally) at 0.8Mbps – that's slower than the likes of Mozambique (1.25Mbps) and Djibouti (1.18Mbps)!

elearning Africa: The 'perfect storm'

The difference is that African elearning is trapped in the middle of a perfect storm: the lack of hardware, infrastructure, internet speed, and even access to mains electricity (only 20% of the total African population have access to electricity according to the UN's Economic Commission for Africa), all means the development of creative alternatives, such as TEDECO's initiative with the University of Ngozi. Beyond the educational environment, corporate ventures suffer from the same problem, allowing commercial entities to produce its own solutions, such as Advanced Integrity Solutions' e-PIKE. Although based in Calgary, Canada, the e-PIKE solution is wholly targeted at delivering a content-rich Learning Management System – but can it really be successfully implemented in Africa?

I spoke with AIS president, John Gordon, who admits the size of the challenge e-PIKE faces: “We have found that the ‘perfect storm’ is a difficult one to navigate. I believe this would be true of all technologies as there is probably not a single stand-alone solution that would conquer all obstacles.”

He adds: “When we designed the e-PIKE technology as a delivery platform we initially focused on trying to build a system that would allow students to access media-rich content – thus enhancing their learning experience – while in distant locations. What we found was our system architecture lends itself to not only delivery of content – English language training, ICDL (international computer drivers license) content and ebooks [to name a few]– but also allowing the support of distant educators. Technology doesn't teach people – people teach people.”

Mobile learning in Africa

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John Gordon, AIS president

In stark contrast to the scarcity of internet-enabled PCs (and sometimes, PCs themselves), the proliferation of mobile phones across Africa over the past decade has been astonishing. In 2007, 49% of people in the developing world had access to a mobile phone subscription, up from just 1% 10 years before. The figures, published by the United Nations' International Telecommunications Union, show how focused 'mlearning' would offer a substantial reach.

One proponent of mlearning is John Traxler, director of the LearningLab at the University of Wolverhampton, who spoke at 'The Big Debate' during this year's elearning Africa summit. A veteran of the event, when I caught up with him Traxler outlined the current state of mlearning and elearning that he's witnessed on the continent in recent years: “I think it's still characterised both in elearning in general, and mobile learning specifically, in a lot of poorly co-ordinated and usually unsustainable pilots, often around short-term input like a donation of hardware.”

Sponsorship is critical

Sponsorship is one area AIS' Gordon believes could hold the key: "Pairing up a sponsor with a distant village is a great model to leverage. For example, schools, colleges or universities work with a sponsor village or site in a distant country – acting as tutors supplementing the educational resources on the system. The sponsor would not only supply educators but would also provide a level of funding – thus reducing the total cost of ownership for the remote system and for the students/community that it is impacting."

Despite that, cultural differences in learning attitudes is one factor to consider, with Traxler comparing southern Africa with northern Europe: "By and large southern Africa hasn't really bought into the 'learning by discussion' model [of Europe]. They're very closely aligned with 'learning by transmission' – you get told things and memorise them." He adds, "That's not true of South Africa, that's always the big exception."

Whilst cultural needs need consideration, Gordon argues that elearning solutions like e-PIKE, "...as a technology that will blend with the community and will improve the quality of life. Much like Oxfam teaching communities about agriculture to be more self-sufficient [providing seeds] rather than just supplying food to meet the current needs, we view e-PIKE as providing 'seeds' of knowledge to help the local community grow."

Turning elearning inside out - literally!

The application of mobile learning in Africa has another issue to contend with, the relationship between elearning and mlearning. "The other difference [between southern Africa and Northern Europe] is for us, mobile learning is either an extension of elearning or a reaction to it. It's seen as tethered or limited, indoor. So mobile learning to a large extent here in Europe is a reaction to that; we'd like to take learning al fresco, into real life."

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John Traxler, LearningLab director at the University of Wolverhampton

He continues, "In southern Africa, there isn't that history – they don't have any elearning to react against – so if anything, mobile learning grows out of the distance learning model, often as a response to infrastructure issues."

Sub-Saharan issues are far greater than the technological inadequacies and the lack of reliable mains electricity in swathes of Africa. "It's quite easy to see the answers and solutions in the terms I understand," says Traxler. "But actually, with poisonous drinking water and [high] infant mortality, I don't think a better class of elearning is necessarily going to solve much. "

You could fill technology schools and university with as much elearning capacity as you like, but in Kenyan primary schools one in six of the kids are orphans. HIV/AIDS

was killing off the teaching population faster than they could train them. If you look at the one laptop per child programme, if I remember correctly, the Nigerian government cancelled their order because they couldn't afford desks to put them on."