nanotechnology, biotechnology, and tele-health to name a few, and they foster the sharing and dissemination of knowledge. Information flows are increasingly used as a measure of wealth.[6] ICT readiness and available cost effective, high-speed Internet are some factors in deciding the suitability for investments, particularly in developing countries.[7]

ICTs and education

ICTs and the Internet have also played an important role in education. Distance education delivered through broadband Internet on fixed, wireless or mobile devices has replaced mail-delivered correspondence courses. Traditional institutions globally are increasingly offering distance courses in competition with virtual institutions somewhat replacing past archaic and latent education delivery methods such as through CDROM or satellite. The education landscape is changing to meet the needs of working students, mostly adults with family commitments who are responding to the growing demands from the industry for specialization and professional development.[8] Rapidly increasing student enrolment rates into higher education institutions in sub Saharan Africa is further constrained by a slow growth in physical infrastructure. New methods of delivering content, teaching, learning, research and school administration at formal and informal settings, and to traditional and non-traditional learners are therefore required to address these increas-

ing demands. Technology demands a shift in the entire education eco-system.

As the Internet bears on social, economic and governance aspects of societies, there is the need to develop indexes and indicators to quantify its influence. One such measure[9] published by the International Telecommunications Union (ITU), which examines readiness, use and impact, emphasizes the important role of ICTs on education and literacy.[10] It suggests that education levels are poor in developing countries compared to their developed counterparts and this can become a major barrier to the effective use of the Internet and computers. Its 2011 report closely relates the differences in levels of education and income inequalities as a major factor that can affect Internet uptake.[11] This is despite the recent growth in telecommunications infrastructure deployment and use in Africa where more than eight percent of its population use mobile phones with a projected reach of 41 percent at the end of 2010.[12] Over 65 percent of the continent lives under the footprint of a mobile network that stimulated about $56-billion in private sector investments between 2004 and 2008.[13] The continent's Internet penetration is projected to reach 9.6 percent by the end of 2010 – although showing growth, it is still a far cry from global averages. Broadband penetration has grown but remains low at 1 percent compared to 24.6 percent in developed countries and eight percent globally by the end of 2010.[14]

The underlying questions are: how much of this

development has been leveraged for teaching and learning? How much revenue generated from the growth of Internet and mobile technologies has been infused into the development of teaching and learning?

This growth has implications on the continued development of the African economy and society particularly in education through the enabling and improvement of access to educational content and material, and through developing educational frameworks that leverage its value. Except for African based initiatives such as and those of the Association of African Universities,[15] African virtual Universities,[16] and UbuntuNet Alliance,[17] there are few advocacies that match the need for technology use and improved Internet access to the demands for quality education, teaching and research. Universities and institutions of higher learning are left to figure out their own needs and how they can adapt teaching and learning styles to its potential. But advocacies and uncoordinated interventions are insufficient to address challenges and leverage benefits. Policies are needed at the university, national, regional and continental levels to integrate technology use for teaching and learning in higher education institutions.[18]

Institutions in North America and Europe have recognized ICT and the Internet's transformative and enabling potential to education. One such

benefit is the increased access to international students, through the availability of information or the delivery of distance courses.[19] ICTs and the Internet applied to any field and particularly in the field of education foster innovation – that is radical, evolutionary, and sometimes revolutionary.[20] Cross border distance education, e-learning, or blended learning resulting from shared curriculum and credentials have emerged and institutions have began to explore the contributions of new collaborative technologies called Web 2.0 and Web 3.0 to teaching and learning.[21,22] If African institutions must compete with the rest of an increasingly globalized world, it must address the gaps that are particularly evident in its slow uptake and application of ICTs and the Internet in the area of education. One such gap is in the applied use of social media or Web 2.0, and the semantic web or Web 3.0.

Collaborative, Semantic Web and Education

The collaborative web often described as the second generation of Internet based services emphasizes collaboration and sharing among users, and the semantic web is the integration and combination of data, and the facilitation of machines to make meaning and to create better understanding.[23,24,25] They represent a category

of tools and a way of working that is collaborative in nature and that provides an open means of sharing information and knowledge.[26] Social media tools used for crowdsourcing, video and voice streaming, collaborative content creation, and shared knowledge spaces offer exciting and innovative ways of teaching, researching and learning. Open source technologies and their philosophies have changed our perception of teaching and learning and how we collaborate and share knowledge online through open resources, open online text books[27], open journals, open research and even open knowledge. They facilitate self-directed learning, allowing access unencumbered by time and location[28]; and they favor a constructivist approach where students are active participants and co-producers of knowledge rather than passive recipients and ordinary consumers.[29,30]

Experience and prior learning, the ability to be autonomous, self-directed, demand driven, ability to interact and collaborate with others are elements that adults are conversant with – functions that are already inherently supported in collaborative and semantic webs, and that can be enhanced through social media tools. Teaching and learning framed in this context therefore require a shift in many areas – in the role of student and teacher, and broadly across academic communities.[31] These concepts require innovative shifts in teaching and learning, and in some cases embracing philosophies which are sometimes characterized by radical paradigm shift.

This shifting role is not about the application of new technologies to existing learning practices. Neither is it about the introduction of automated administration and Learning Management Systems (LMS) to the school environment. ICTs and the Internet in teaching and learning transcend the use of LMS' for administration and course management. Current LMS's approach collaboration through the introduction of applets such as chat utilities, blogs and collaborative discussion tools that simulate existing social network platforms. While these integrated platforms provide some level of security and content control, learners may find them insufficient and their social media counterparts more appealing – for their ease of use, from the inherent value gained from social interactions, because of their low bandwidth requirement, and in most cases in sub-Saharan Africa – the availability of low cost data bundles on mobile devices.

Challenges

These tools are not a panacea to addressing Africa's education difficulties. Indeed, there is no silver bullet to the growing challenges facing education in the continent. Issues of access to infrastructure, electronic journals, research funding and libraries; availability of appropriate physical environment conducive to learning; and resources – both human and material, constitute some of the challenges in higher education. These should be addressed using a

[6]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). ibid
[7]Worldbank(2009). Ibid
[8]USGAO (2002). Distance education: Growth in distance education programs and implications for federal education policy. USGAO
[9]The ICT Development Index
[10]ITU (2009). Measuring the Information society. ITU
[11]ITU (2011). Measuring the information Society. ITU
[12]ITU. (2010). The World in 2010: ICT Facts and Figures – the rise of 3G. Retrieved December 2010 from: http://www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf
[13]World Bank. (2010). ibid.
[14]ITU. (2010). The World in 2010: ICT Facts and Figures – the rise of 3G. Retrieved December 2010 from: http://www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf

[15]http://www.aau.org/
[16]http://www.avu.org/
[17]http://www.ubuntunet.net/
[18]Cohere (2011). Innovative practices research project: Cohere report on blended learning. Human resources and skills development Canada
[19]In a study of over 2500 colleges and universities in fall 2008, online enrolment growth rates superseded higher education enrolment by 15.8% and over 4.6 million students took online courses. This growth along with efficiencies in time and facilities use, and marketability, has resulted in institutions having to increasingly offer fully online, blended or hybrid courses. Price-per-student is lower while access to quality educational resources have improved.
[20]Cohere (2011). Innovative practices research project: Cohere report on blended learning. Human resources and skills development Canada.
[21]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). Ibid
[22]Jiao, X. & Miao, L. (2010). ibid
[23]Miltiadis D. Lytras, Ernesto Damiani and Patricia Ordóñez de Pablos(2009). Web 2.0
[24]http://en.wikipedia.org/wiki/Semantic_Web
[25]http://www.w3.org/2001/sw/

[26]Donston, D. (2008), Web 2.0. eWeek.
[27]http://www.flatworldknowledge.com/
[28]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). ibid
[29]GOLDING, C. (2011), The Many Faces of Constructivist Discussion. Educational Philosophy and Theory, 43: 467–483. doi: 10.1111/j.1469-5812.2008.00481.x
[30]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). ibid
[31]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). ibid

holistic approach and should involve collaborative strategies with stakeholders from the private sector, government, civil society working in the area of research, education and knowledge production, and academia itself.

Social media use in administration, teaching and learning presents new sets of challenges at the conceptual and personal level. For instance, questions of standards and their harmonization across institutions of higher learning; plagiarism and intellectual property rights are conceptual challenges that need new approaches and more systematic ways to address them. Physical challenges allude to the willing or a lack of one towards the use of technology for research, administration, and teaching and learning even when they are available. Further, a lack of experience and skills to use social media constitutes another difficulty and may further expand the gap between the technology savvy and technophobes. Privacy and online security pose new sets of challenges which institutions, states, academic bodies and teachers should consider as they institute policies, design learning outcomes and develop curriculum at various levels across the educational stratosphere.

To summarize, there is a set of challenges that should be addressed for an efficient use of social media in teaching and learning. Firstly, new literacies are required. First, digital literacies, which include the ability to navigate the Internet, search for information from credible sources, and identify relevant and applicable information is an essential skill. The growth of the Internet has resulted in a large set of information sources and knowledge bases that require literacy skills in order to find relevant and credible information and knowledge from the pile. Secondly, identities are shaped through collaborations with others online. Each forum we contribute to, each blog post we author, each comment we make, and each profile we create contributes to our identity. Users should therefore pay attention to the alignment of their online personae with their real life one. Thirdly,

learners should keep track of their learning because the benefits from online learning and the use of social media tools may not be immediately visible. Hence, learners must develop the lifelong learning skills necessary to track their own learning and work so that they could be referenced for future use. Fourthly, security and privacy concerns must be at the forefront of the online learner. With the growth of cyber crime and identity theft, learners must develop the literacies that protect their identity and personae. Lastly, trusting the Internet or certain aspects of it relates directly to how much value a learner receives from its sources. Building trust on the Internet depends on the ability to critically analyze and verify sources of information. Literacies are required to iteratively build and develop this confidence.

Recommendations

A number of recommendations are therefore emergent from this brief that may require necessary policy and administrative level attention in institutions of higher learning.

1. Institutions, governments and policy makers should recognize the opportunities that the growth of ICTs and the Internet offer to teaching and learning. The focus should not be limited to improving access to research materials or to educational administration only, but also in recognizing their potential for the transformation of teaching and learning; for creating linkages across boundaries between students and faculties, and for producing the international knowledge worker capable of participating in the globalized world.

2. Innovative forms of partnerships may be required to advance technology use in higher education institutions. Public private partnership models which draw upon expertise from the industry should help in defining areas in which technol-

ogy use in education can respond to societal needs and increasing global demands. New strategies are required that invite local industries to support research and development of home-grown tools, applications and services that leverage collaborative and semantic web attributes, that meet the nuances of the African learning environment and that positions it to participate in the global knowledge economy.

3. A scan of the literature shows a limited amount of research in the use of new

web technologies for teaching and learning in Africa. Further research based on evidence may be required, particularly focused on action based methods in higher education settings where lessons can be drawn and experiences adapted to reflect improving practices. The outcomes of such research should contribute to the development of policies, partnerships, strategic plans and their implementation.

Policy Brief

Social Networking Technologies for Teaching and Learning

by Ben Akoh

Background

Information and Communications Technologies (ICTs), particularly the Internet, continue to play a significant role in shaping current and future social, economic and political structures, at all levels.[1] They are one of the many drivers of globalization, they enhance communication, influence relationships, and empower and also disenfranchise citizens. They are disruptive, and at the same time creative, in a way that challenges existing structures and causes us to rethink society and how we learn, work and play.[2,3] It has become the tool for mediating our human activities.[4] Broadband Internet is said to potentially contribute $500 billion to the GDP of the US, and between $300 to 400 billion in Europe.[5] ICTs, broadband and the Internet play a significant role in research and development, and innovation in the fields of

[1]Souter, et al. Paradigmpaper.
[2]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). Adult Education and the Social Media Revolution. *Adult Learning*, 22(2), 4-12.
[3]Jiao, X. & Miao, L. (2010). Application of Information Technology in Adult Education. *2010 International Conference on Optics Photonics and Energy Engineering (OPEE)*, vol.2, no., pp.449-452, doi: 10.1109/OPEE.2010.5508020
[4]LeNoue, M., Hall, T., & Eighmy, M. A. (2011). Adult Education and the Social Media Revolution. *Adult Learning*, 22(2), 4-12.
[5]Worldbank (2009). Information and communication technology for development 2009: Extending reach and increasing impact. Available at: http://siteresources.worldbank.org/EXTIC4D/Resources/IC4D_Broadband_35_50.pdf