

How ICTs and Collaboration with NRENs are Changing the Face of Higher Education

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Abstract

This paper presents a sustained argument for the university of today, and its academic and research staff, to make the best use of the facilities afforded by RENs to ensure that ICTs become the foundation for academic networking and collaboration. The paper examines the role of the REN and its changing goals, the challenges faced when using out-dated teaching methodologies in the classroom, and the role that RENs can play in networking or peering individuals, research communities, and institutions. I also make the case for a closer relationship between academic staff and their REN so that peering can become a seamless way to bring a nation's teaching and research staff, and their institutions, together to bring universities fully into the technological world of the twenty-first century.

Keywords: ICTs in Higher Education, Academic Practices, Peering, Networking and Collaboration, RENs

1. Introduction

“Research and education networks (RENs) have been designed to meet the needs of some of the most demanding internet users in the country: scientists, academics and researchers in the nation's leading academic institutions. These networks are engineered to support high-quality services that remain consistent regardless of the number of users on the network.” (DiMaria, 2016).

This paper is concerned with the benefits of education institutions using ICTs maximally through their NRENs so that higher education in Africa can experience the transformation necessary to bring it into the twentieth-first century. Chiefly I want to explore the area of networking, and will be using the analogy of “peering” to bring out the benefits of networking and collaboration through RENs. I want to be clear from the outset that I am talking from the perspective of the end user, the academic who not only uses the commodity Internet, but is also a strong supporter of our local REN and is keen to see it play an expanded role in the education sector.

In this networked world where we are now seeing the growth of the Internet of People and Li-fi, the lonely academic in his / her ivory tower is a thing of the past. Networking, or “academic peering” is as inevitable as using a computer even though many academics still resist it. My central point here is that we ought to embrace it because academic peering can have numerous benefits: it can save human-power hours and cut costs, it can enhance content quality, it can expand audiences and bring the very best content to more students, and it can promote the development of critical minds that are creative and can think outside the traditional box. In other words, academic peering can promote the provision of education that is fit for today's purpose. And while this can start with individual academic staff or even a few institutions

coming together, in thinking the big picture, it can be achievable nationally and regionally by using our RENs to network institutions cheaply and efficiently.

The importance of RENs for academic research and teaching is indisputable. According to Tusubira (2011), RENs not only provide “dedicated high speed networks that enable access to online resources for students and researchers”, but also “support content-level collaboration in research and education.” “Support content-level collaboration”: this is precisely where we need to start our reflections. This shifts the burden of responsibility from the provider and enabler, the REN, to the end users who are the content creators, the academics and researchers. And this is, of course, fair. But as the old adages goes: horses can be brought to water but cannot be made to drink.

Listen to Rob Vietzke (vice president of network services at Internet2 in the US): “RENs typically comprise a group of engineers and entrepreneurs who helped build the network capability because it is additive. We are not marketing people and we're certainly not profit-driven people, so sometimes we miss the opportunities to market the great services that we're doing” (DiMaria: 2016). I am sure most of the REN people here will agree; this is where university networking comes in to play. RENs are the “enablers” in the sense that they are the backbone supporting our teaching and research efforts. We have come a long way since books and learning and research resources were stored in libraries, and RENs had no role. With the diversification and democratization of knowledge and learning materials, a country's teaching and research institutions now need their RENs to do what they are formed to do, that is: to be very specialised service providers that support research and education activities. And if RENs are truly to be enablers of research, this means that significant changes have to be implemented at the grassroots university level. My point? Enabling research networks achieve their self-imposed goals cannot be done solely by the REN.

2. The Challenges of Academic Practices in Institutions

Even with the best will in the world, there is a fundamental barrier in terms of transforming higher education, whether maximizing the use of RENs or not: our traditional academic practices. The presence of computers on campus, no matter how many, is not an indicator that the university and its community are ICT savvy: the hardware is simply a means to an end – because computers are about people when all is said and done. It is the Internet and the numerous apps and various software that are used to enhance the student learning process that are important. Throughout the region – with notably few exceptions – academic work practices appear to have remained more or less static over the past thirty years, and have remained largely unaffected by recent advances in ICTs. And while many academics have embraced Power Point Presentations and libraries have online catalogues and a growing number of e-books, few academics have moved beyond the “chalk 'n talk” methodology of teaching and simply use the PowerPoint presentation as a dust-free means to read notes in the classroom.¹

Given this framework of academic practice, creating challenging, learner-friendly, contextualized (given the fact that knowledge transfer remains largely a North to South process), and stimulating learning resources that are based on solid research is a huge challenge in the East Africa region. Despite the fact that the majority of new and emerging technologies are easy to use, the academic mind-set seems unable to embrace these and integrate them into teaching methodologies. While there is a number of reasons why many academic staff are stuck in the past (financial remuneration being perhaps the most important), other constraints play

¹ For a comprehensive survey of PPPs (and its criticisms) see Craig, Russell J. and Amernic, Joel H. (2006) ‘PowerPoint Presentation Technology and the Dynamics of Teaching’ *Innovative Higher Education*. 31 (3). <http://www.springerlink.com/content/d07282073378x00/> [accessed 24 October 2016].

their part in maintaining the traditional *status quo*. In the past, the lack of up-to-date academic resources left lecturers to rely their own class notes and the meagre holdings in the university library. Today, yellowing notes are sometimes updated with some content downloaded from the Internet, but the Internet is a big, scary place, and the academic is used to his / her traditional comfort zones.

The good news is that we are being forced to change because student expectations and learning practices have changed. The serious-minded student will often explore a topic widely on Google and obtain good up-to-date resources. Scholars need to engage with that and begin exploring for themselves. In trawling the Internet for up-to-date information, academic staff can compile learning resources that are a mixture of their own notes, videos from the YouTube education channel, podcasts from universities world-wide, lectures online, and integrate these with discussions and interactive debates.

The world's foremost intellects in the university world have numerous videoed lectures uploaded to the Internet; we can easily use these to stimulate and broaden our students' learning experiences. We can listen to Amartya Sen on peace-building, Richard Branson on entrepreneurship, Stephen Hawking on the future of robotics, Amina Mama on feminism ... all these are much more interesting than listening to one lecturer three times a week for a full semester. It simply takes a little creativity. But let me widen the net (so to speak): what about co-teaching? I teach *in situ* while my colleague's class can see the lecture while at a different location and then the next week we swap places. One course, two teachers, interested students, and more importantly, increased inter-university student interaction. This is the individual academic peering that is made possible through our RENs.

3. The Role of RENs and Peering

And the wonderful thing is that while this requires co-operation, none of it requires donor finance, much in the same way that we do not need a loan from the IMF to dig a vegetable garden! Individual academic peering and inter-university peering can, in my view, yield exponential results. And it is precisely because most African countries are resource constrained that we need to forge smaller, non-donor funded research and teaching communities and research groups. But these need not be local or even regional. Let us think the big picture: they can be global. Gone are the days when the department budget had to look for sufficient funds for guest lecturers from other universities: today, this is easily achieved with all parties in their own location using the video-conferencing facilities provided by our RENs.

I believe that peering in the research / academic world not only has intellectual but also (and this is increasingly important in today's world) economic benefits in many and various ways. My main point is that while the engineers work behind the scenes to provide the academic research world with better facilities and tools, the end users cannot now be passive receivers: the enablers need input from content providers. In order for a REN to be truly successful, the nuts and bolts parts, the backbone, must be enflashed by local researchers and educators who realise the benefits of peering, of networking, or simply, of sharing knowledge.

In the pre-Internet pre-REN days, the knowledge and skills I gained were built upon the shoulders of those who have gone before me and those who laboriously published and disseminated their work. In this age, the knowledge I gain is not confined to the books I find in a library; the knowledge I have at my fingertips on my phone is truly vast and is constantly being generated and disseminated in the blink of an eye. For pen to print used to take up to a year; today I can publish online as the thoughts are formed in my head. Makerere lectures can be heard in Dar-es-salaam in real time; MIT gurus are on You Tube even before the whiteboard has been wiped clean!

The mind-boggling growth of ICTs, and the changing face of education that is concomitant with this growth makes academic peering even more important than in previous decades. But despite the uptake of ICTs in the higher education sector, and despite the earnest desire on the part of many vice chancellors and deans to create vibrant research communities and utilize their REN to the maximum, a fair number of academic staff needs to be coaxed on to the playing field. Way back in 2011 Louis Fox wrote: “a major challenge confronting African nations today is how to ensure that all colleges and universities, including those that have not traditionally benefited from expensive research infrastructure, can participate seamlessly in national and multinational e-science efforts that are cyber-infrastructure-enabled. The challenge begins with the need for ubiquitous deployment of advanced research and education networks.” (Fox: 2011) While it is indeed satisfying to be moving in the direction of advanced networks on the continent, we note that the game has more players now: engineers and academic staff and researchers!

As our local REN, puts it in their just-published newsletter outlining their development, growth, and future plans: “The third level envisaged is where transformation mostly happens and we shall refer to it as the level of deeper sharing of resources. The resources to be shared include: highly skilled human resource (such as academic staff, researchers and other specialists); high value research facilities (such as expensive lab equipment, high performance computer (HPC) facilities, massive research data); jointly utilised education content hosted by shared repositories which then facilitate multiple colleges collaborating to offer new or widely needed special programmes and regionally or globally distributed collaborating research teams.” (RENU: 2016) Breaking the barriers that prevent us from collaborating and sharing in academic teams may not be easy – at my university we have been trying with some limited success, but we shall keep on looking for ways to network and work together to change the face of higher education. Our RENs have done a wonderful job in enabling university peering. The future will be a joint initiative.

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Biography

Irish academic and philosopher Deirdre Carabine has lived and taught in Uganda for twenty-three years. She has recently been founder Vice-Chancellor at the Virtual University of Uganda (VUU), the first fully online-only postgraduate university in Sub-Saharan Africa (founded 2011). Prior to that she set up International Health Sciences University in Kampala. She began her Africa adventure at the Uganda Martyrs University in 1993. Currently, she is Director of Programmes at the young VUU and, in that role, she is fully responsible for the university's Virtual Learning Environment. She is passionate about the use of ICTs for education and is a strong supporter of RENU.



