



Teaching Online Journals in Tanzania: Knowledge Production and the Digital Divide

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Abstract

While online academic journals have theoretically made a vast amount of material available to academics and students at institutions of all kinds, there is a great deal of variation in their use. This article explores issues of access to these materials in African universities, arguing that it is not infrastructure but rather lack of skills that hampers access. It is based on a series of workshops taught to students at Saint Augustine University of Tanzania (SAUT), a large new private university. This article argues for the importance of accessing online journals for the developing the research culture of an institution such as SAUT. Journal articles are almost entirely produced in the global North, yet if access is taught in the context of critically engaging with these discourses, this can be of great benefit to the South. It is not a question of encouraging the students to accept the authority of these sources; rather, they can be used to illustrate an academic debate and broaden students' exposure to different paradigms and epistemologies.

Similarly, by confronting the practicalities of teaching the workshops within the local infrastructure of SAUT, the workshops engaged with the existing strategies used by students in dealing with the limitations to Internet access in Tanzania. Through using the students' own experiences of Information and Communication Technologies (ICTs), the workshops illustrated how making use of their strategies not only increased the relevance of the workshops, but also smoothed many of the practical pitfalls of teaching in Tanzania.

Introduction

An increasing amount of peer-reviewed academic literature is available online. This availability has the potential to help level the playing field between the resources available to elite research-led institutions and those institutions with less of a developed research culture. Accessing these resources online has become an essential skill for academics and students at many institutions, but many—particularly in the global South—are not in a position to take advantage of the opportunities provided to them. In the case of Africa, international schemes have made large numbers of academic journals available to institutions for free or at a significantly reduced cost. Yet usage rates by staff and students remain very low, particularly outside of the elite African institutions. One of the primary reasons for this is that staff and students lack the knowledge of what materials are available to them, and they do not have the skills to access the materials.

This article is based on my experience teaching at Saint Augustine University of Tanzania (SAUT), in Mwanza, on the shores of Lake Victoria. SAUT is a large, secular, private university, owned and operated by the Catholic Church. SAUT is one of the largest examples of the new private universities that have emerged since the liberalization of Tanzania's higher education sector in the late 1990s. While playing an increasingly important role in educating Tanzanians, these universities have yet to develop a strong research culture. They stand in contrast to the research-centered elite public institutions such as the University of Dar es Salaam. Working alongside a colleague, Stephen Kerr, we developed and taught a series of workshops on accessing online journals through JSTOR and publishers' websites. These workshops were designed for postgraduate students in a variety of disciplines across the social sciences and humanities, including history, mass communication, and linguistics. These workshops covered the process of accessing these repositories, including logging in, browsing, searching, accessing an article, and downloading PDFs. Each workshop lasted around two hours and was highly practical in nature, with students using their own laptops and cellular modems.

In this article, I make the case that accessing journals online is an essential part of stimulating research and knowledge production in institutions such as SAUT. This is not because these Northern-authored texts provide the sole source of academic knowledge, or that the information presented was not open to challenge. Rather, the academic debates presented in journals provide an opportunity for the students to consider competing theories, paradigms,

and epistemological positions. With the weak research culture of the institution, the goal was to help students critically engage with the academic debate, and perhaps develop their own positions. A similar ethos informed aspects of the pedagogy of the workshops, as we made the decision to work with the students' own experience of Information and Communication Technologies (ICTs). This experience not only benefitted the teaching through bringing the teaching closer to students' own experiences of ICT, it also proved to have practical benefits for combating the issue with Tanzania's infrastructure.

The Digital Divide and Online Journals

Much of the work done on ICTs in Africa focuses on development, with a primary focus on the economic impact of these technologies. The underlying epistemological assumptions behind many of the existing approaches can be challenged, however. In an analysis that is useful for this project, Robin Mansell (2014) draws a distinction between exogenous and endogenous models. The former is the type of top-down approach favored by institutions such as the World Bank, in which "knowledge is like light" (World Bank 2011, 1). This approach, however, privileges the knowledge produced in the "advanced" North over the global South. Endogenous approaches, on the other hand, are bottom-up and emphasize the local production of knowledge, recognizing the existence of multiple knowledges and perspectives. Mansell (2014) argues that an endogenous approach in the policies surrounding ICTs for development would provide a greater chance for the technologies to be used for human development.

If an endogenous approach is to be welcomed, does this not present a problem for teaching online journals? Given that the vast majority of material in even Africanist journals is produced in the North, is using these journals not a clear example of privileging Northern knowledge? Through the teaching of the workshops, I strived to ensure that this was not the case. As described in this article, the research culture of a university such as SAUT is extremely limited, dominated by a single, positivist research paradigm. By placing journal access within the pedagogical context, these workshops stimulated debate and illustrated the different paradigms and research methodologies present in the broader literature.

The differences in access between the global North and South has been described as a “digital divide,” yet this is a concept that has been critiqued. David Gunkel (2003) observes that the term “digital divide” inherently creates a dichotomy between two binary opposed options: the “haves” and “have-nots”. Furthermore, it creates a hierarchy between these categories. The example of access to online journals supports Gunkel’s critique. The global situation is more complex than the single division that the “digital divide” suggests. Globally, there is a great variation between institutions, and indeed among students, in the use of available online resources. In Tanzania, usage is low: as outlined below, on average there is less than one download of an online journal article for every instructor or student in Tanzania. Within Tanzania, however, there is also a great deal of variation between institutions, not only in the technological infrastructure but also the training and knowledge of library staff, academics, and students (Manda 2005). Even within the global North,

the experiences of institutions differ. For example, a study of universities in the UK (Research Information Network 2009) reveals that per capita usage of online journals varies greatly between institutions. In research-intensive institutions, per capita usage was almost three times higher than less research-intensive institutions.

Our concern in teaching these workshops was on the *use* of online resources by students. This stands in contrast to much of the existing research on the digital divide that has, as Jan A.G.M. van Dijk (2012) observes, focused on physical access to computers and the Internet (64). Indeed, this concern for the infrastructure is present in most discussions of Internet literacy in Africa (Belcher, Gwynn, and Rosenberg 2006, 120; Manda 2005, 271-274; Harle 2010, 17-23). Much of the research focuses upon the negative aspects of Internet access in Africa. There are, of course, challenges to using the Internet in Tanzania. The quality of Internet connections at African higher education institutions is frequently very low; a decade ago, they averaged the same bandwidth as a domestic broadband connection in Europe, and cost 50 times the price paid by educational establishments elsewhere in the world (Gakio 2006, iii). New developments bring new issues: “[T]he advent of electronic journals generated new problems, specifically the need to upgrade ICT facilities and infrastructure, to secure good internet access, and to invest in training and familiarisation” (Harle 2010, 4). Programs to develop the teaching of online materials have been limited by unreliable Internet access and an irregular power supplies (Wema 2010).

Yet the focus upon the difficulties and problems surrounding Internet access does not get us far in developing a pedagogical approach to accessing online journals. The approach of our workshops was not to teach within university computer labs, but to make use of the students' own laptops and cellular modems. We initially created a workshop that encouraged as much real-world use of the materials as possible. That approach had an interesting side effect in revealing the fact that students had already developed strategies to combat the difficulties of being online in Tanzania. Laptop batteries could help students survive through the country's frequent power cuts, and cellular modems provided far more reliable Internet access than what was available in university labs. Working *with* the students' knowledge of the limitations of the Tanzanian infrastructure was not only valuable in improving their learning. It also had practical benefits for ensuring that the workshops ran smoothly, and were not interrupted even if there were power cuts or outages.

Accessing Academic Journals Online in Africa

The value for African universities of accessing peer-reviewed journal articles has been addressed at the international level. There are schemes in place to give African institutions access to a large amount of scholarly material, two of which will be highlighted here. JSTOR, perhaps the most important online journal repository, has an African Access Initiative: universities, colleges and secondary schools in Africa can apply for free access to JSTOR's massive archived journals collection (JSTOR n.d.). Thus, African universities have free full-text access to the back issues of over two thousand journal titles. Another organization that has given attention to the issue of African access is the

International Network for the Availability of Scientific Publications (INASP) and their Programme for Enhancement of Research Information (PERI).^[1] Among other research development activities, PERI negotiates with a broad range of publishers across many disciplines to organize reduced fees or free access to their journals. [All of the major academic publishers are involved with this program](#), including Oxford University Press, Springer, and Taylor & Francis. The decision over which subscriptions will be purchased is arranged by country-level consortia of universities and colleges. This means that all universities in Tanzania have access to the same titles through PERI (Hanley et al. 2012). INASP has also been organizing training for librarians since 1999 (Belcher, Gwynn, and Rosenberg 2006, 116).

Through PERI, JSTOR, and other initiatives, African institutions have the potential to access a vast amount of scholarly material. For example, a Tanzanian student or academic has access to over 6,400 full-text titles (Hanley et al. 2012, 5) via PERI, with an additional 2,000 through JSTOR. Looking at the top 20 titles across 15 disciplinary areas, Jonathan Harle (2010, 11-13) finds that African universities have access on average to 79 percent of the top journals.

Furthermore, there are other positive aspects of these schemes. The schemes recognize some of the realities of working in African universities. Access to online resources from most Northern institutions is secured through the IP address of an institution. This is also the case in Africa's more elite research institutions, including the University of Dar es Salaam (Harle 2010, 23). However, many institutions in Africa lack the infrastructure to reliably provide

access through a stable IP address, so in these cases access is provided via a password and username. SAUT is in this category. Each publisher has a different username and password, and most change annually. The impact of this system will be discussed further below. Country-level consortia for negotiating access also have the potential for levelling the playing field between institutions within a nation. While the reality of access varies between institutions, a researcher at SAUT at least has the potential of securing access to the same journals as a researcher at the University of Dar es Salaam.

Despite all of these positive initiatives, these resources are barely used by Tanzanian academics or students. In 2011, Tanzania downloaded 65,000 full-text journal articles from journals made available through PERI (Hanley et al. 2012, 5). At this time, Tanzania had around 85,000 students in higher education, and around 4,500 academic staff (The World Bank 2014). This means that a mere 0.7 articles were downloaded per student or academic. [\[2\]](#) Tanzanian students and academics are clearly not making use of the online resources available to them. As Harle (2010, 22) says:

[The] *availability* of scholarly information can no longer be claimed as the primary problem. ...If the theoretical availability of scholarly content is now much greater, and if the sustainability of these access models can be assured, the problem may need to be redefined. It seems necessary instead to consider the ways in which *available* journals are or are not being *accessed* and *used*. In doing so, attention is focused on the barriers which prevent or discourage academics and students from making use of scholarly materials for research. [emphasis in original]

Exploring these barriers, I argue, allows us to understand deeper issues surrounding research culture and knowledge production at African institutions.

The existing literature on accessing online journals, quite understandably, devotes a great deal of attention to the role of libraries and librarians (Lwehabura and Stilwell 2008; Harle 2010; Manda 2005). While undoubtedly libraries and library staff have a key role to play in improving access to online materials, the focus on librarians alone does not ensure that the training is mainstreamed into the curriculum. I argue that the exploration of these issues goes beyond the libraries into an understanding of the broader issues of knowledge production in Africa. It also goes beyond the interests of librarians or mainstreaming information literacy into the curriculum; it is instead an issue key to understanding the research culture of the institution. It is first, however, necessary to understand the educational context in which a university such as SAUT exists.

SAUT: A Private University in Tanzania

The education system in Tanzania has undergone considerable changes since the end of British rule in 1961. The father of the nation, Tanzania's first president, Julius Kambarage Nyerere, is referred to in Tanzania as *Mwalimu* – teacher. Nyerere studied at the University of Edinburgh, becoming the first Tanganyikan to achieve a degree from a British university (Molony 2014). While Nyerere placed great emphasis on education in his time in office, his focus was very much on primary education.

The Arusha Declaration of 1967 heralded Tanzania's move toward socialism, one of the key consequences of which was the policy of *Education for Self Reliance* introduced in 1968. As Nyerere (1968 [1967], 290) said, "The education provided by Tanzania for the students of Tanzania must serve the purposes of Tanzania." Primary education was a goal in itself, not preparation for further academic study (Wedgewood 2005, 7). The policy was a success in terms of primary school enrolment, reaching 97 percent gross enrolment by 1981 (Buchert 1994, 112), but only 3 percent of those finishing primary school went on to secondary school (Cooksey 1986, 184). The principal university at that time – and, indeed, to this day – was the University of Dar es Salaam, established in 1961 as a University College affiliated with the University of London. According to the [Dar es Salaam website](#) it became a full university in 1970.

By the 1980s, Tanzania's economy was close to collapse. Nyerere left office in 1985, and there followed a series of economic and political liberalizations (McHenry 1994), eventually affecting the entire education system. The 1995 Higher Education Act established the provision for private higher education institutions and their regulation, while the National Higher Education Policy of 1999 encouraged their growth (The United Republic of Tanzania 1999, 1995; Ishengoma 2007, 87). Higher Education is now regulated by the Tanzania Commission for Universities (TCU), which accredits institutions, programs, courses and qualifications.

There has been a rapid expansion of the number of students attending Tanzanian higher education institutions. As it stands, Tanzania has 28

universities recognised by TCU, 11 public and 17 private. Below these are another 23 colleges, centers, or institutions operated by one of the institutions, 7 public and 16 private (TCU n.d.). World Bank figures reveal that in 2012 there were 166,000 registered students in tertiary education, up from only 23,600 a decade prior. In fact, from 2010 to 2012, student numbers almost doubled (The World Bank 2014). Thirty years ago, even reaching secondary school was a rare educational achievement; nowadays, the rate of students entering higher education is increasing rapidly.

SAUT is part of this rapid expansion, and is one of the largest private universities in Tanzania. It is a private, secular, non-profit institution, owned and managed by the Catholic Church. SAUT's origins lie in the Nyegezi Social Training Institute, established by the Catholic White Fathers in 1960, close to Mwanza, Tanzania's second largest city. With the liberalization of Tanzania's higher education system beginning in the mid-1990s, the Catholic Bishops of Tanzania began the process of changing the institute into a university. SAUT was established in 1998, and has expanded considerably since its origins. In addition to the main campus of the university in Mwanza (where I was based), SAUT has opened, or is soon to open, centers in other cities, including Bukoba, Dar es Salaam, Arusha and Mbeya.

SAUT is not unusual in being run by a mainstream religious domination, as most of the other private universities are run by Christian churches, including the Lutherans, Anglicans, and Moravians. Even though Christians and Muslims exist in close to equal numbers in Tanzania, only two universities—the Zanzibar University and the Muslim University of Morogoro—are run by

Islamic organisations. None of these denominational universities limit student enrolment or staff recruitment below the management level to members of a specific faith. This is, in part, a legacy of Tanzania's success at nation building, with the importance of national identity making forbidding political mobilization on religious grounds (Heilman and Kaiser 2002). At SAUT, senior management, at head of faculty level and above, is limited to Catholic priests and nuns. Yet it remains a secular institution, as its [stated mission](#) emphasizes. A large proportion of the funding comes from the state, in the form of the tuition of undergraduate students paid for through the student loans system.

SAUT has faculties across the social sciences, including faculties of linguistics, mass communication, and sociology, as well as law and engineering. I was based in the faculty of Education, the largest in the university, covering not only school teaching methodologies but also geography, Swahili language, and my own discipline, history. Undergraduates in the faculty studied for bachelor's degrees in Education, mostly looking to become secondary school teachers within Tanzania. Class sizes were large, with lecture classes of 800 not uncommon and no tutorials or seminars for undergraduates. The faculty had recently begun to expand into two-year postgraduate master's programs. The Masters of Arts in Educational Management and Planning was very popular, attracting over 100 students a year. These student numbers proved a challenge for undergraduate and postgraduate teaching, particularly when it came to supervising the student research projects required of undergraduates and postgraduates.

As is the practice in Tanzania, undergraduate classes were usually taught by assistant lecturers, teachers who held a master's degree but not a Ph.D. A Ph.D. was required to teach postgraduate programs. This background to the staff may have affected their own knowledge of accessing online journals. Research in the UK (Research Information Network 2009) illustrates a vast difference between access by undergraduates and teaching postgraduates, and those taking research-led postgraduate programs. If there was a similar pattern in Tanzania, then staff at the assistant lecturer level would have little experience of accessing these resources themselves.

Considering that, thirty years before, few could expect to be educated in Tanzania beyond primary school, there has been a considerable and rapid change in the country's education sector. These rapid increases have led some Tanzanian commentators to worry about the quality of education being offered by the private higher education sector. Bayreuth-based Tanzanian academic Victoria Makulilo (2012, 65) is concerned that private universities in Tanzania lack the necessary human resources and are looking to increase the number of graduates without regard for their quality. Johnson Ishengoma (2007, 104-5) from the faculty of Education at the University of Dar es Salaam argues that the rapid expansion of private education has more to do with religious institutions looking to expand their influence rather than the provision of quality education. A report on the widening access to higher education in Tanzania notes that "There were numerous complaints ... about quality and standards in the private university—particularly in relation to lecturers, lack of facilities, support, accommodation and services. There was

little sense of student entitlement to quality in pedagogical and academic practices” (Morley et al. 2010, 49). The report does emphasize that this is not only a problem in private institutions, but also in public universities as well. A particular concern of mine is the quality of research conducted at institutions such as SAUT, and it is to this area that my attention now turns.

Research at SAUT and the Need for Online Journals

SAUT does not have the reputation of being a research-led institution. I argue that developing a research culture is important for universities even if teaching focused. First of all, both undergraduate and postgraduate students are required to produce a research-based dissertation. A large amount of time is spent by faculty on research supervision. The second reason that a research culture is important at SAUT is that many members of the staff are looking toward the opportunity provided by further study, for example a holder of a master’s degree looking to study for a Ph.D. At the time I was there, SAUT did not offer a Ph.D. program, but many members of the staff were preparing proposals for study in other institutions within Tanzania or abroad. There have been attempts to develop the research culture at the institution by producing faculty journals and seminars. Yet there remain serious issues with the research at the institution and with the future of social research in Tanzania.

At SAUT, I supervised dozens of undergraduate and postgraduate research projects, mostly in the field of education. I examined many dozens more. With only a handful of exceptions, the research projects were framed within a

positivist research paradigm, employing either a quantitative or mixed-method research design. Furthermore, the majority of the projects were very narrow in scope and ambition. For example, a typical project would apply an old theory such as Maslow's hierarchy of needs—a hierarchical ordering of motivations first proposed in the 1940s—to the motivations of teachers working in the school district closest to the university. There is certainly scope for an exploration of Northern theories in the African setting, yet the work did not engage critically with theory, offering little in terms of insights into either the theory or Tanzania's education system.

As I am from a qualitative, Africanist research background, I found this troubling. A colleague of mine, Stephen Kerr, has more than five years' experience teaching research methodologies to students in Tanzanian universities. He concludes that the almost complete dominance of a positivist research paradigm in Tanzania's research institutions "severely degrade[d] our intellectual landscape, narrow[ing] the field of social inquiry, and stunt[ing] the development of new theory" (Kerr 2013, 1). The use of the positivist paradigm even extended to research in history. A piece of research on historical social change in Mwanza region, for instance, could be based on research gathered through questionnaires containing mostly closed-ended questions. While both Kerr and I accept that positivist social research has a role, the dominance of this paradigm over all others has serious consequences. The research at SAUT was generally very narrow in scope. "The constant borrowing of other people's ideas or theories to test and re-test is a little like the washing and rewashing of *mitumba* (second-hand clothes) bought in the

market. Not only does it cheapen the academic endeavour, but also the theory can become worn out and threadbare very quickly” (Kerr 2013, 4).

Kerr traces the dominance of the positivist paradigm back to the earliest developments in academia in Tanzania following independence: “This first wave of Tanganyika based intellectuals knew only too well that all eyes were on them waiting for them to fail, and therefore ensured they complied with international standards by buying into the dominant scientific episteme of the era. Very quickly, conducting social ‘research’ became synonymous with carrying out ‘scientific’ experiments” (Kerr 2013, 1). Dependency theory—in which the Dar es Salaam-based academic Walter Rodney (1973) played a key role—was the dominant theory in both the North and South. Yet as intellectual fashions in the global North changed, dependency theory was increasingly being rejected. As Nugent observes, postmodernism became more fashionable in the humanities and social science in the North: “Although the ... fashion gripped North America and Europe, it passed most of Africa by” (Nugent 2009, 6). An institution such as SAUT is also very influenced by the dominant paradigms in the University of Dar es Salaam.

The aim of teaching online journals was not so much to get researchers at SAUT to become followers of the latest Northern academic fashions. Nor is it the goal of increasing the power differences between institutions through privileging the Northern-produced information in Northern journals. Rather, the hope was that using online journals would be part of the development of new research approaches and theories.

It is also important to use the teaching of the journals to illustrate the power of academic debate. Journal articles are an excellent way of illustrating these debates. With each point supported by a reference or evidence, journals illustrate how critical debates operate in academia. As SAUT students rarely—if ever—witnessed the cut and thrust of an academic presentation or seminar, it was through the debates presented in academic journals that they would be exposed to this aspect of academic life. It was probably too much to expect students to challenge the prevailing set of research orthodoxies in the North. However, I did hope that the students would use their existing knowledge to pick up on errors in established academic texts, whether these were a mistranslated text or another inaccurate detail in the published work of a Northern academic. This did not occur, but hopefully students will learn the skills not only to point out errors, but also to critically engage more broadly with academic debates.

An understanding of the academic discourse that is published in Northern institutions is essential for academic debate. As the Sri Lankan academic Suresh Canagarajah puts it:

I believe that it is a necessary evil that periphery scholars should use center publications even to resist their dominance. Given the power, spread, and currency of center publications, it is foolhardy to not use them to further periphery knowledge and interests. Since these are the established channels of academic communication, we cannot help but use them even for oppositional purposes. Furthermore, periphery scholars need to negotiate their interests and knowledge with center scholarship. This is important for challenging the

limitations of mainstream knowledge, disseminating periphery knowledge effectively, and eventually contributing to the enrichment and democratization of international relations (Canagarajah 2002, 12).

Whatever one's view of the debates generated, use of academic journals is essential to engaging with the international research process.

Yet further to Canagarajah's argument, working in SAUT also led me to reflect upon where the "center" lay in center-periphery debate. From the perspective of a university such as SAUT, I increasingly grew to believe that the center to which SAUT and other universities is peripheral to is made up of the Tanzanian public universities. "Center" is not synonymous with "North"; neither is the South necessarily the periphery. In the case of the field of history, in particular, the history department of the University of Dar es Salaam looms large. This department has probably been the most intellectually influential academic department in Tanzania's post-independence history. To the extent that there was genuinely a "Dar es Salaam School" of history, it has been understood as referring to histories that are nationalist in viewpoint, aimed at uncovering African initiatives in Tanzanian history (Denoon and Kuper 1970). While much work was done by expatriate historians such as Terrence Ranger^[3] and John Iliffe, it was a 1969 volume edited by two Tanzanians, Arnold Temu and Isaria Kimambo, *A History of Tanzania* (Kimambo and Temu 1969), that marked the compilation of a coherent history of Tanzania (Denoon and Kuper 1970, 332). In turn, it is this history that became the basis for the Tanzanian primary and secondary school history curricula.

In many areas, the study of Tanzanian history by Northern historians has been a response to the nationalist history produced by the University of Dar es Salaam. To take one example that I found useful in the teaching environment at SAUT, consider the study of Maji Maji Rebellion. This was a major rebellion in 1905-7 against German rule in the south of the colony. This is a particularly good event to teach because it is an accessible example of an academic debate. The University of Dar es Salaam produced a nationalist interpretation of the event as a proto-nationalist struggle that led directly to the independence struggle (for example, in a chapter by G.C.K. Gwassa in *A History of Tanzania* [Gwassa 1969])). More recently, there has been a response in articles published in Northern research journals, including by Jamie Monson (Monson 1998) and Thaddeus Sunseri (Sunseri 2003). These responses critique the nationalist approaches of the Dar es Salaam School, through an exploration of the social roots of the conflict that went beyond it as a proto-nationalist anticolonial struggle. It was through the debate occurring in Northern academic journals that students were able to explore themes related to a nationalist historiography that originated in Dar es Salaam. There is the potential here for students to engage critically at the national level, within the global South, facilitated by the Northern academic journals.

When thinking about ideas of the center, it is more complex than only exploring the divide between Northern and Southern institutions. It is necessary to also explore the power differentials *between* institutions within countries. Access to online materials produced by the global North is one way

in which those newer periphery institutions can hope to catch up with the older Southern institutions that enjoy more developed research cultures.

Use of ICT by Students at SAUT

If the approach to exploring Information and Communication Technology (ICT) use in Tanzanian universities focuses purely on the ICT provision of the institutions themselves, then the picture for SAUT is not positive. There are a number of computer rooms across campus; these include machines open to all at the main library, as well as computer rooms in various faculties and the US-government funded information resource the American Corner. However, the total number of computers is tiny compared to the number of students. The additional problem is the unreliable electricity supply experienced across Tanzania: it could be expected to have one full day without power every week, as well as many other shorter power cuts. While there is a generator that provides power to some buildings, this does not cover the library, nor many staff offices. In terms of Internet access, the connection provided by the university is also slow and unreliable. Wireless Internet is available in the central library, but this is often slow and goes down for weeks at a time due to technical problems. This compares to the University of Dar es Salaam, which has always stood far above other institutions in terms of student-computer ratios and the speed of Internet access (Manda 2005). One important way in which the IT infrastructure is notable at the University of Dar es Salaam is that a list of resources is made available on the [library website](#). This means it is far clearer for students and staff to know what resources are available to them. Yet, in comparing this university to an institution such as SAUT, it should be

remembered that all institutions in Tanzania have access to the same online journals.

There have been a number of studies of the use of ICT by students in Tanzanian universities (Manda 2005; Lwehabura and Stilwell 2008). There is, however, more to the use of ICT than the rather pessimistic picture of provision of Internet access by the institution. The use of ICT, and the Internet in particular, is a fast-changing landscape in Tanzania. I have been involved with ICT in Tanzanian education since the late 1990s, working in a large state secondary school near the town of Moshi. At that time, computer skills were limited, and use of the Internet in any capacity was rare. By the mid-2000s, computer skills and Internet use had increased dramatically, with access primarily through Internet cafes. The greatest growth in the last few years has been the growth in mobile Internet, with access to the Internet through mobile phones or through cellular modems attached to laptops. It is these technologies that we utilized in the provision of the online journal workshops. In the future, no doubt the technologies will change further. For example, during one workshop, a student asked if they could access journals on their mobile phones. Any future design must take into account the use of mobile phones and tablets for accessing these materials.

Even though formal provision is weak, ICTs are an increasingly important part of the student's academic lives at SAUT. Students are expected to have access to computers—undergraduate and postgraduate research papers were expected to be printed, for instance. At the request of my undergraduate students in my lecture course, I started to give out lecture notes in PDF format

as well as paper copies. The reason that students requested materials digitally is probably so they could save the money they would have spent on photocopying paper materials.

Importantly, students at SAUT already used the Internet for research. In their research projects, the use of some Internet-based sources was universal. Wikipedia was a popular source of information, perhaps because it tends to be high up on the page of Google results rather than an understanding of the particular nature of this resource. In many respects, students were naïve users of ICT. For example, some of their behavior left their laptops at risk of viruses and other security breaches. This included installing potentially hazardous browser toolbars, and the use of USB sticks in multiple machines without antivirus software. The bigger problem was the lack of critical reading when encountering material online. This was a skill that we aimed to develop throughout the students' studies, not least through the reading of academic journal articles.

As Jan A.G.M. van Dijk observes, having the *motivation* to use digital technologies is an essential requirement before any of the additional hurdles to getting online can even be approached (van Dijk 2012, 62-65). It is clear that students were motivated to use the Internet for research, and, moreover, that they saw Internet-based sources as appropriate for their academic work. This was an essential first step in teaching the course. As it turned out, the level of enthusiasm of students in the workshops was high, as described in the next section.

Teaching Online Journal Workshops

The workshops were designed to help combat some of the weaknesses in the research culture at SAUT and to develop an understanding of the nature of scholarly sources. A concern raised by Harle's research is that Tanzanian academics can lack this understanding and fail to comprehend the academic landscape in which articles reside (Harle 2010, 29). As part of the broader teaching during master's programs, the workshops at SAUT aimed to combat these problems. Familiarity with the scholarly landscape can only come with time, but the workshops aimed to give students the first steps in this direction. One way this was done was through talking about and explaining academic journals and the peer-review process in both the workshop and preceding classes. This broader recognition of the nature of academic sources and academic debates must be an essential part of such training. It is only through this knowledge and understanding that students can hope to follow an emerging academic debate and understand the importance of critical engagement with published material.

In the workshops, we taught accessing, downloading, browsing through journals, and finally how to use online search. After teaching the basics of logging onto the repository using the username and password provided by the institution, the focus became giving the students some idea of the breadth of material that was available in an online repository such as JSTOR. Students were encouraged to browse, to see the wealth of journals available across a broad range of academic subjects. As it turned out, one of the most important issues was teaching students how to return to the homepage of each journal in

case they got lost in the site. We also highlighted the difference between articles, book reviews, and review articles.

Students were then taught how to reach a specific article in a given issue of a journal, as in the case that they were searching for an article on a reading list. Browsing through a website in this manner is probably not the most efficient or easiest way of accessing academic material. A British study, for instance, found that researchers at elite research-led British institutions spent only a short amount of time on publishers' websites (Research Information Network 2009). Yet from a pedagogical perspective, it was important to reinforce for SAUT students the nature of academic journals organized into volumes and issues. If the students had been familiar with accessing academic journals offline, and had experience using the long shelves of bound journals in a university library, then this would be less necessary. I hoped that understanding the structure of academic journals would improve the students' understanding of the academic debate. I also felt that recognizing the structure of journals would encourage the use of proper referencing, to ensure that the volume and issue numbers appeared in students' bibliographies.

Given that the students were not skilled in many aspects of IT use, I produced a printed handout for the class that outlined click-by-click the steps required to access the journals. Every step was accompanied by a screenshot. There are risks with preparing a static handout to cover dynamic media such as websites. Indeed, three days before the workshop, JSTOR introduced a major redesign of their website. Not a mere cosmetic change, the redesigned site required an additional step to be performed. This required a late-night

redesign of the handout before the class. The workshop also taught the downloading of PDFs, so that students could have their own library of documents for offline use. This was a particularly useful skill to have in this educational context as many of the students would be accessing these resources at an Internet café. It was, however, probably the least straightforward part of the workshop to teach, given the broad range of browsers and computer settings.

While the ability to easily search repositories is one of the most powerful functions that online resources offer, in the workshop we decided to teach that at the end of the session because once the students are introduced to searching, there is no stopping them! They do not need prompting that they should use search to explore themes from their research projects. It is extremely rewarding to see the enthusiasm with which they delve into the available articles. This can also be depressing: it demonstrates the lack of access to academic sources that they have had throughout their scholarly career. Searching is more of an art than a science, and it is here that the utility of the click-by-click handout ended.

There are many powerful tools for research that the workshops did not touch upon. We did not discuss the use of software that can aid referencing and bibliographies, like Papers and Endnote. The workshop also did not discuss the use of broader search engines, such as Google Scholar. There were a number of reasons why the teaching of these would have needed extra care and attention. First of all, it would have been necessary for a strong differentiation to be made between ordinary Google and Google Scholar, to

make sure that students understood the difference between the two. The main problem, however, was that it is not always easy or straightforward to gain access to the articles found on Google Scholar. Students at the University of Dar es Salaam reported similar issues; even for the sites for which the university does have access, students are often unaware of this (Harle 2010, 28). The concern was that the students would turn to the material that was one simple click away on Google Scholar, frequently materials such as master's theses, and other non-peer reviewed material. While this material may be of use to the experienced researcher, students lacked the scholarly experience to differentiate the valuable material from those of less academic value.

These issues highlight perhaps the greatest drawback of the current infrastructure surrounding online journals at SAUT: the lack of some form of centralized list telling students which resources are available. For a student or academic to know which resources are available, they have to have a certain amount of familiarity with a range of websites and have an idea which publisher's website offers access to which journals. This makes searching for a specific journal problematic. Anders Wändahl notes that, while Northern universities can afford to employ dedicated librarians to compile lists of online resources available to students, few African universities have access to this level of resource. He does conclude, however, that more resources than might initially be thought *are* available, it just takes more effort and knowledge for the scholar to access the resources compared to a Northern scholar (Wandahl 2009). Ideally, scholars *should* have that level of knowledge of the academic

landscape that enables them to find the resources they need without a centralised list or database. There is a degree where this lack means there is a pedagogical opportunity to teach a deeper understanding scholarly landscape, to foster a deeper understanding. Yet, overall, the lack of a centralised database of available online journals is a major hindrance.

Understanding the Digital Divide in Practice

The issue of locally produced knowledge also extends to how we utilize the students' existing skills and experience. One of the key early decisions about organizing the workshop was whether it would take place in a library IT lab or using the students' own personal laptops. My initial view was that the better option was to use a university lab. I thought that this would make the teaching more straightforward and effective, because every student would be using identical hardware and browser software. However, my colleague Stephen Kerr persuaded me that it was a better option to have students bring in their own laptops and cellular modems. This, he argued, would give a closer real-world experience by having students use of their own equipment. It seemed likely that, given the large student numbers and the small availability of university computers, almost all students would access the Internet through either their own laptops or at Internet cafés. We eventually decided that we would use the students' personal laptops for the task, a decision that proved to be correct in a number of important areas.

A quick show of hands in the classes where the workshop would be conducted revealed that it was certainly feasible for students to bring in their own

laptops, as they had a laptop per 2 or 3 students. Recall that access to journals is through password and username, rather than IP address offered in most Northern institutions as well as the University of Dar es Salaam. One of the effects of this was that accessing material would be the same from the students' own laptops, at an Internet café, or a University lab. This is, of course, possible at institutions that provide access via IP authentication, through the use of proxy servers or VPNs. Yet this presents problems if the institution does not have a robust IT infrastructure.

IT training sessions in Tanzania are often hampered by poor Internet connections and an unreliable electricity supply. For example, the International Network for the Availability of Scientific Publications—the organisation that runs the program for providing African universities with access to online journals—has run training sessions for information literacy skills trainers. One of the principal problems they reported in running the workshops was intermittent Internet connections and power outages that lasted several hours (Wema 2010). By having students use their own laptops and cellular modems, these problems were largely alleviated. Using laptop batteries means that power cuts are not an immediate issue. While cellular Internet connections can go down, as students' connections were spread across several providers, this meant that most of the participants still had access. The workshops could continue in the face of these challenges.

This experience convinced me that endogenous, locally produced knowledge of IT systems should be utilized in the teaching process. Apart from any epistemological issues, there is the practical point: my students lived with the

practical issues of using the Internet in Tanzania every day, and so had developed strategies to cope with the limitations. This is the reason that laptops and cellular modems were widely used, as opposed to computer labs. From a purely practical perspective, working within the students' own experiences means that the classes run smoother. This is an issue that trainers, librarians, and teachers working in any institution should consider.

Trainers, librarians, and researchers should be aware of the realities of how the Internet is used on the ground—and how this provides both problems and opportunities. If the physical infrastructure of the university is relied upon for training, this presents a twin problem: it presents the risk of power-cuts and Internet shortages, while at the same time it does not reflect the real-world use of IT by the students. Researchers should also be aware of the shifting IT landscape in Africa. Given that access to the Internet via mobile phones is increasingly widespread, for example, there are opportunities for new ways of working with researchers.

Undoubtedly, there are limitations to the use of the Internet for research in Tanzania. The available bandwidth is more than sufficient for accessing online repositories. But for other uses of the Internet, the available bandwidth poses difficulties. Viewing streaming videos online is often problematic. In my own research, I found the resources at www.archive.org to be a very valuable. In particular, this site scans out-of-copyright books from many libraries, making titles that were previously very difficult to obtain readily available from any computer with an Internet connection. I found this site very useful in my own research on the published accounts of 19th century explorers and missionaries.

However, bandwidth issues often made this site difficult to use, particularly when downloading large PDFs of historic texts.

This bandwidth issue has wider implications for the role of ICT in African universities. At an institution such as SAUT, many staff and students are gaining access through their own resources—through Internet cafés and cellular modems. Furthermore, these private providers supply a better service than that provided by the institution. Many of the essential features of a university IT infrastructure in Northern institutions (institutional email addresses, access to resources via IP address, proxy servers) are absent in the South, with abundant workarounds in place and required. The role of the ICT infrastructure provided by the university seems to me to be fundamentally different from that in Northern institutions.

This leads to the question, how should a private university in Africa be seeking to develop its ICT infrastructure? If a university such as SAUT did introduce IP address-based authentication for online journals, the current infrastructure of the university would not be able to cope, and access would be compromised. In developing the infrastructure of the institution, it might perhaps be better for the institution to think about those services that *only* the university can provide: access to online journals, for example, through the proper distribution of the necessary usernames and passwords among staff and students. It is the training of scholars, and facilitating access, that is essential to encouraging knowledge production in Africa. Yet by shifting the burden of infrastructure to the students, it also shifts the costs to them as well. As access

widens to include students from poorer backgrounds, this cost burden erects another barrier to higher education entry.

Conclusion

Teaching this workshop on online journals in Tanzania was an engaging process that led me to explore the ways the research culture and knowledge production at an institution such as SAUT could be developed. SAUT had a very underdeveloped research culture, and developing access to online journals proved one way to begin to change this. Broadening the students' access to high-quality academic texts was one way to begin to get students to engage with academic debates. Even though journals are almost entirely produced in the global North, they can also be used in the context of academic debates originating within the global South. Yet in order for this to be productive in terms of developing a research culture, it is necessary to contextualize these journals in teaching that goes beyond the mere accessing of online materials. Rather, critical engagement with broader research paradigms must be developed.

From a pedagogical perspective, it is not positive to adopt an approach that relies on a fixed idea of how a workshop such as this should be taught. This is particularly the case when working in an environment where there are constraints to access, for example in terms of infrastructure. Rather, it is better to embrace the knowledge and experience of students—after all, they live with the problems of access every time they try to go online. This is not purely a way of making students engage more closely with the material. On a

purely practical level it can also smooth over many of the technical constraints faced by teachers.

Compared to elite research-led institutions, the situation in the global South remains one where students and academics at institutions on the periphery have many more challenges to accessing information. Accessing online journals is only one step in the essential task of broadening the research culture in these institutions.

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[1] PERI ran in two phases from 2003 to 2013, the second phase of which was called PERii. It has recently been replaced by INASP's Strengthening Research and Knowledge Systems (SRKS). Negotiating with publishers for access to online journals remains a key aspect of their work (INASP 2013).

[2] While a more detailed breakdown of these figures would be informative, the information is, unfortunately, not available. For example, as access is gained through University-level username and password, it is not easy to differentiate between faculty and student access. The reliability of the usage

figures from INASP has also been questioned, as there can be a great deal of variation from year to year (Harle 2010, 16). As a result, the statistics are offered purely as a general indication of low online usage in Tanzania.

[3] Ranger (1971) himself strenuously objected to the suggestion that there was a single Dar es Salaam School of history. See also the response of Denoon and Kuper (1971).