

The Use of Social Media Technologies to Create, Preserve, and Disseminate Indigenous Knowledge and Skills to Communities in East Africa

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The preservation, management, and sharing of indigenous knowledge is crucial for social and economic development in rural Africa. The high rate of illiteracy (print-based) in rural Africa and the exclusion of indigenous knowledge from Western education add to the information gap experienced in rural Africa. Other challenges facing oral cultures are the disappearance of traditional knowledge and skills due to memory loss or death of elders and the deliberate or inadvertent destruction of indigenous knowledge. The rapidly increasing use of social media and mobile technologies creates opportunities to form local and international partnerships that can facilitate the process of creating, managing, preserving, and sharing of knowledge and skills that are unique to communities in Africa. This article proposes the use of social media and mobile technologies (cell phones) in the creation, preservation, and dissemination of indigenous knowledge and discusses the role of libraries in the integration of social media technologies with older media that employ audio and audiovisual equipment to reach a wider audience.

Keywords: Social media and mobile technologies, indigenous knowledge, preservation and dissemination of knowledge, libraries

Introduction

Indigenous knowledge is the local knowledge that is unique to a given culture or society. Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions, and private firms. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities (Warren, 1991). Rajasekaran (1992) defined indigenous knowledge as a systematic body of

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knowledge acquired by local people through the accumulation of experiences, informal experiments, and intimate understanding of the environment in a given culture. Indigenous knowledge is collectively owned and exists as agricultural and medicinal practices, stories, songs, folklore, proverbs, cultural values, taboos, norms, languages, and rituals (Nakata & Langton, 2005). Sithole (2007) adds that “indigenous knowledge is predominantly tacit, embedded in the practices and experiences of its holders . . . commonly exchanged through personal communication and demonstrations from the teacher to the apprentice, from parents to children, from neighbour to neighbour” (p. 118). Battiste and Henderson (2000) note that indigenous knowledge is holistic; there are no separate categories for science, art, religion, philosophy, nature, and culture, as in Western knowledge systems.

This study focuses on East Africa countries of Kenya, Uganda, Tanzania, Rwanda, and Burundi, with a combined total population in 2012 of 135.4 million people (East African Community Facts and Figures, 2012). The literacy rate for the East Africa Community in 2009 was 74.2%—Burundi (67%), Kenya (87%), Rwanda (71%), Tanzania (73%), and Uganda (73%)—which means that in the region, one-fourth of the population is illiterate and relies on oral tradition (word of mouth) for the transmission of knowledge and skills (World Bank, 2010). Even with the advance of Western education (print media) and, increasingly, electronic media, indigenous knowledge is still widely used in East Africa for agricultural production, animal husbandry, health care, and conservation of natural resources. Nyumba (2006) noted that “some 80% of the world’s population depends on IK [indigenous knowledge] to meet their medicinal needs, and at least half rely on IK and crops for food supply” (p. 5). Although widely used in rural communities, indigenous knowledge has not been adequately documented or validated and is not readily available outside these communities.

This article proposes the use of social media and mobile technologies (cell phones) in the creation, preservation, and dissemination of indigenous knowledge and discusses the role of libraries in the integration of social media technologies with older media that employ audio and audiovisual equipment to reach a wider audience. Although the focus here is on East Africa, the discussion can apply to other oral cultures in Africa and around the world.

Why Preserve Indigenous Knowledge?

Access to relevant information has been documented as crucial to the economic, political, and social well-being of any community. The 1998–1999 *World Development Report* (World Bank, 1999) noted that knowledge, not capital, is the key to sustainable economic and social development. Mundy and Compton (1991) noted that indigenous technical knowledge is a new focus in development circles and that growing numbers of scientists and organizations recognize that it offers affordable and locally adaptable solutions to development problems. Gachanga (2005) argues, however, that,

despite acknowledgement of the important role indigenous knowledge plays in sustainable development and peace building, many governments, donors, and NGOs appear to make little use of this valuable resource. Their recognition of indigenous knowledge often amounts to little more than lip service, seldom translating into action or funding. (p. 11)

A study sponsored by the United Nations Environment Programme in Kenya, Tanzania, Swaziland, and South Africa and conducted between 2004 and 2006 concluded that "the value of indigenous knowledge lies in its ability to deliver social and economic goods; [and] that certain traditional practices if popularized, and integrated with modern knowledge systems, can help to alleviate poverty" (Steiner, 2008, p. 9). The study also found that indigenous knowledge systems have enabled communities in those countries to live in harmony with their environments for generations, as evidenced in agricultural production, food preservation and storage, health care, environmental conservation, and natural disaster management. The rural poor depend on indigenous knowledge for specific skills and knowledge essential for their survival. For example, indigenous knowledge is used heavily by rural people in agriculture, animal husbandry, management of natural resources, and medicinal herbs. Sithole (2007) notes that

very little indigenous knowledge has been captured and recorded for preservation, yet it represents an immensely valuable database that provides humankind with insights on how numerous communities have interacted with their changing environments, including resources of flora and fauna. (p. 118)

He warned that indigenous knowledge is vulnerable to attrition if it is not recorded for storage and wider transmission.

Indigenous communities use oral communication and hands-on experience (apprenticeships, ceremonies, practice, etc.) to preserve and transmit their knowledge (Battiste & Henderson, 2000). However, young people are losing these skills, because they spend more time at educational institutions (Western) than with the teachers (elders) in the community. Preservation of indigenous knowledge is critical, because it ensures the continuation of the community and its knowledge. If indigenous knowledge is not recorded and preserved, the knowledge will be lost through the death of elders and traditional leaders in African communities and will remain inaccessible to other communities, scholars, and development workers (Warren, 1991). For example, when a traditional midwife dies, the birthing knowledge and skills go with her and can never be retrieved.

What Are the Challenges Facing Documentation of Indigenous Knowledge?

Several challenges affect the documentation and dissemination of indigenous knowledge in Africa. According to Lwoga, Ngulube, and Benson (2008), "poor attitudes, knowledge culture and personal characteristics (age, gender, status, wealth, political influence and so on) also affect perceptions, actions and access to knowledge in the local communities" (p. 176). Meyer (2009) adds, "information flow in an oral context is controlled by attitudes, perceptions, norms, values and belief systems inherent to indigenous people" (p. 5). For example, when people experience an information need, they will approach a knowledgeable person whom they trust. They are hesitant to make individual decisions unless they have been sanctioned by the group or the headman of the community (Nwonwu, 2008). A library or an information center offers a neutral space in terms of gender, age, and status in community. Therefore, development agencies and nongovernmental organizations (NGOs) need to understand these complexities when designing projects in rural Africa. Other factors controlling the sharing of indigenous knowledge are

mechanisms used by local people to protect their own intellectual property (Ngulube, 2002). If there is some form of protection, local people will feel comfortable sharing their knowledge for current and future generations.

Other factors affecting the transmission of indigenous knowledge are colonial and postcolonial education, which has excluded indigenous knowledge (Whatman & Duncan, 2005), and the deliberate or inadvertent destruction of local knowledge (Eyong, 2007; Semali & Kincheloe, 1999). Eyong (2007) argues that

IKS [indigenous knowledge systems] have suffered for decades from several strategies of disinformation embedded in western centric, colonial and post-colonial education and western religion, science and technology . . . often data on IKS are distorted to confirm the hypothesis of non-Africanist scholars. (p. 131)

Semali and Kincheloe (1999) note that “a key to comprehending the power of Western science involves its ability to depict its findings as universal knowledge . . . such ability is imperialistic, as it operates to characterize indigenous knowledge as inadequate and inferior” (p. 29). Therefore, formal education and the advance of technology account for the loss of interest in indigenous knowledge, especially among younger generations. According to Msuya (2007), younger generations that are exposed to Western education are less interested in indigenous knowledge, viewing such knowledge as outdated and primitive. Ulluwishewa (1993) adds, “younger generations underestimate the utility of indigenous knowledge systems (IKSs) because of the influence of modern technology and education” (p. 11).

The collections and services in African libraries typically are foreign and contain materials unfamiliar and irrelevant to rural African communities (Mchombu & Cadbury, 2011; Sturges & Neill, 1998). Libraries in Europe and the United States exist to meet the cultural and information needs of their local communities, but African libraries are both British and American (Amadi, 1981, as cited in Nyana, 2009). African libraries promote foreign values, science, language, and history and undermine traditional knowledge in science, medicine, history, and language. The lack of skilled librarians, especially those with the knowledge and willingness to incorporate oral culture in collections and services to rural communities, creates knowledge gaps and further limits the reach of library services in rural Africa. Indigenous knowledge is at risk of becoming extinct if appropriate measures are not taken to manage it to assure its accessibility to future generations (Lwoga et al., 2008).

Another challenge affecting documentation of indigenous knowledge is addressing copyright and intellectual property rights issues that are included in the United Nations Declaration on Rights of Indigenous Peoples (United Nations Permanent Forum on Indigenous Issues, 2007). The Economic Commission for Africa recommended that “oral tradition and indigenous knowledge in African communities should be exploited in all their forms of expression, giving cognizance to the protection of intellectual property rights” (United Nations, 2001, p. 3). The challenge to the protection of traditional creative expressions is that copyright is Eurocentric, placing emphasis on individuality and material, contrary to traditional and indigenous cultural norms (Greyling & McNulty, 2011). Kuruk (2002) adds that the historic

communal or collectivist approach to ownership of creative expressions associated with oral tradition is conceptually different from the Western copyright system, which ascribes ownership to individuals.

The 2003 World Summit on the Information Society declared a vision for

a people-centered, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights (WSIS, para. 1).

The declaration also focuses on the role of technology, libraries or similar institutions as custodians and facilitators of access to information (WSIS, B, para. 19; WSIS, B3, para. 26).

The main task facing Africa is the creation of sustainable strategies to preserve and disseminate indigenous knowledge. According to Wilk (n.d.), traditional technology is not static, but dynamic, and sustained through constant innovation and experimentation. Therefore, efforts at technology transfer that "ignore local circumstances, local technologies, and local systems of knowledge are often doomed to waste enormous amount of time and resources" (p. 2). He advocates for "hybrids" that incorporate and mix both traditional and scientific technology through collaboration. Concerted efforts involving the public and private sectors as well as nongovernmental organizations and the United Nations are needed to help communities preserve, document, and disseminate indigenous knowledge for adaptation or adoption within and beyond their community boundaries.

Several information and communication technologies projects in Africa are supported by the Institute for International Cooperation and Development (IICD). Public telecenters and kiosks offer access to computers, the Internet, and other digital technologies and provide information on a wide variety of topics from agricultural information and weather forecasts to educational information (IICD, 2009). Social media technologies have changed how people communicate and access information and knowledge, and they are keys to the preservation and provision of indigenous knowledge. The introduction and expansion of social media technologies create new opportunities for development agencies, businesses, NGOs, and information agencies, including schools and libraries, to partner with rural communities, national governments, and social entrepreneurs to create, manage, and preserve knowledge and skills that are unique to communities in East Africa.

Social Media and Mobile (Cell Phones) Technologies

Social media technologies allow individuals and communities to create and share user-generated content (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011). Internet penetration rates are estimated at 15.6% throughout the African continent and continue to grow (Internet World Stats, 2012). In East Africa, the penetration rates are 28% in Kenya, followed by Uganda (13%), Tanzania (12%), Rwanda (7%), and Burundi (1.7%). Interestingly, almost one-third of the Internet users in Africa are also Facebook users

(Internet World Stats, 2012). Social media such as YouTube, Facebook, Google Docs, and Twitter can be used to create, access, and share information or skills within social and geographic communities in East Africa and among wider audiences. Most social media do not require specialized skills or training; however, some social media technologies require reading and writing abilities, so they are accessible only to literate individuals and are, therefore, limited to urban and educated rural populations.

YouTube allows users to upload, share, and view videos. YouTube is multimedia-based and therefore can be employed by illiterate as well as literate users. Recorded videos of indigenous knowledge (music, dance, agricultural practice) can be uploaded on YouTube and viewed by local communities in a library setting. An example of a successful YouTube forum is BETUMI: The African Culinary Network (<http://www.betumi.com/>), a space "to discover, document, and share information on the vast and fascinating culinary heritage of Africa." Created by Fran Osseo-Asare, BETUMI has been connecting scholars, professionals, and others who delight in African cuisine and food history.

Facebook allows individuals to post videos, share interests, make connections, and join groups with similar interests. The number of African Facebook users now stands at over 17 million, up from 10 million in 2009. More than 15% of people online in Africa are currently using Facebook, compared, for example, to 11% in Asia (Essoungou, 2011). From the protestors at the Arab Spring to youth living in the slums, ghettos, and streets of East Africa, social media and mobile technologies have changed the way people earn their livelihoods and live their lives.

Google Docs (<http://docs.google.com>) allows users to create documents, spreadsheets, forms, and presentations within the application itself or to import them through a Web interface. It is also a collaborative tool for editing among users and nonusers in real time, and it can be shared, opened, and edited by multiple users simultaneously. Google Docs lowers barriers to collaboration and is a boon for communities in East Africa that may not have access to popular, but expensive, word processing packages like Microsoft Office. The Google Docs platform is popular with students and urban populations. To help users in Africa enrich and shape the content about Africa, engineers at Google created Google Baraza (http://wn.com/google_baraza) in 2010. Baraza, which means "task force" or "council" in Swahili, allows people in countries across Africa to share knowledge with each other by asking questions and posting answers that may be of local or regional interest.

Twitter is a real-time information network where individuals can send 140-character text messages (tweets) to their followers. In addition to connecting with families and friends, Twitter can be used by businesses and farming communities to broadcast their merchandise or commodities for sale, check prices, and interact with customers and suppliers.

Access to an Internet-capable cell phone enables people to employ social media tools to connect with others who share their interests, experiences, and circumstances. Cell phones are ubiquitous in developing countries because they afford users portability, personal control, and flexibility (Castells, Fernández-Ardèvol, Qiu, & Sey, 2007). Access to cell phones in sub-Saharan Africa has increased dramatically over the past decade. There are 30 mobile phones per 100 people in sub-Saharan Africa, and 60% of the population has mobile phone coverage (World Bank, 2009), compared to fewer than three

landlines per 100 people (Aker & Mbiti, 2010). In Tanzania, for example, 97% of people have access to a cell phone, profoundly impacting people's lives and livelihoods (Hancock, 2005). Cell phones can capture knowledge in the place where it is generated. Even the simplest cell phones provide a mechanism to make a call and report on knowledge being created in situ. Camera-enabled phones enable users to capture an image, which adds a visual dimension to knowledge. Having both audio and video capability enriches the knowledge-sharing experience. Access to an Internet-capable cell phone enables local communities to access relevant local content. Local entrepreneurs have begun to develop platforms and content specifically targeted to these new users. An example of a successful mobile Internet-driven technology is the Mashavu telemedicine system (<http://blog.mashavu.com/blog/home/>), which connects rural communities with health care professionals in rural areas of Kenya. Trained Mashavu operators use cell phones to gather information about patient health, and they convey the information to a nurse, who responds with medical advice within 20 minutes. Mashavu is as much a health care platform as an educational and networking platform that leverages the social capital of the Mashavu kiosk operators to improve access to pre-primary health care.

Another dimension of information exchange that could be advantageous for economic development and that would facilitate the use of social media is the existing supply of older media (CDs, films, and audio and video cassettes) that are typically housed in African libraries, schools, and other information centers. These media, while outdated, contain useful information that could be made available to large audiences through conversion to social media and other communication technologies.

Libraries and Integration of Social Media and Mobile Technologies

According to Mchombu and Cadbury (2011), most library service points are located in urban areas, excluding the vast majority of the rural population living in dispersed settlements. These barriers prevent rural residents from accessing library resources even when they are locally available. With poor infrastructure and without an operating budget, many African libraries cannot afford the cost of documentation, preservation, and dissemination of indigenous knowledge. In addition, East African libraries and information centers usually are not able to afford the cost of maintaining digital resources and, hence, cannot make a meaningful contribution to the digital environment. For example, Kitengesa Community Library in Uganda receives no government funding and is solely supported by donors (Dent & Yannotta, 2005). Okore et al. (in Chisita, 2011) noted that developing countries have a wealth of indigenous knowledge but lack an environment that permits free flow of ideas among community members. The author recommended that libraries create an environment that allows communities to meet and exchange ideas about agriculture, medical care, ecosystems, and farmer-to-farmer interactions. Unlike developed nations with well-supported library systems, libraries in Africa work in isolation and struggle to survive due to inadequate funding from governments that do not acknowledge the importance of locally generated knowledge.

The advent of social media and mobile technologies offers East African libraries, in partnership with local communities, the opportunity to document, disseminate, and raise awareness about indigenous knowledge. However, social media and mobile technologies will only be used by people who can afford to purchase computers or cell phones or in other ways gain access to the Internet. Thus, libraries could act

as custodians and moderators of the indigenous knowledge database and train community members on how to collect and document oral and visual materials based on community needs and upload information to social media technologies that could reach broader audiences.

Another option for the main library in a region is to set up outreach terminals or kiosks in public places such as shops, markets, schools, and churches, thus providing local residents the means to access the databases in which indigenous knowledge is stored (UNESCO, 1997). These technologies also might break down the social and gender stratification that is a limiting factor in most rural areas (Meyer, 2009).

Libraries and other information centers could also post audio feeds or videos of indigenous knowledge to the social media and communication technologies available in a particular community. For example, most rural residents have radios, so recorded or live information on how to grow and market local indigenous vegetables might be featured on a radio program using the language of the area. Having a successful farmer from the community provide such information to his or her neighbors would illustrate the value of knowledge that is generated locally while building social capital in the community. Launched in 2007, the African Farm Radio Research Initiative (<http://www.farmradio.org/>) works with more than 400 radio broadcasters in 38 African countries to fight poverty and food insecurity by helping African radio broadcasters meet the needs of local small-scale farmers and their families in rural communities. The initiative works with partner radio stations to plan and deliver special radio campaigns and programs that are designed to address a specific development challenge, such as soil erosion or banana bacterial wilt. In India, the Digital Green project (<http://www.digitalgreen.org/>) has been successful in disseminating targeted agricultural information to small and marginal farmers in India through a digital video database produced by farmers and experts.

Several preservation initiatives in Africa use Web 2.0 technologies. The Ulwazi Programme (<http://www.ulwazi.org>) is an initiative of the eThekweni Municipal Library to preserve the indigenous knowledge and local histories of communities in the greater Durban area, South Africa. It is based on a model whereby online indigenous knowledge resources are established as an integral part of local public library and information services. The Ara Irititja project (<http://www.irititja.com>), supported by the South Australian Museum, partners with local Aboriginal organizations to collect and preserve both traditional and current Anangu material and stories. Through an interactive multimedia archive database, the materials are then given back to the community. The Archive of the Indigenous Languages of Latin America (<http://www.ailla.utexas.org/>), a joint project of the Departments of Anthropology and Linguistics and the Digital Library Services Division of the University of Texas at Austin, preserves and makes accessible narratives, ceremonies, oratory, conversations, and songs in indigenous languages of Latin America. Users must register and agree to terms and conditions concerned with intellectual property rights. The Galiwin'ku Indigenous Knowledge Centre in Australia records and documents current cultural practices and provides a place for the return of important historical recordings to the community.

Internet access varies widely between developed and developing nations. For example, while 78.6% of the population in North America has access to the Internet, that number drops to 39.9% in Latin America, 28.7% in Caribbean America, and to just 13.5% in Africa (Internet World Stats, 2012). In rural Africa, collaborations involving libraries, NGOs, and development organizations that offer newer

technologies such as social media and Internet access and older technologies such as fax, telephone, and video might be a cost-effective model for documenting, storing, and disseminating indigenous knowledge resources. Such a system would allow libraries to provide digitized indigenous knowledge to communities and wider audiences using NGOs' telecenters at reduced cost. Kaddu and Nyumba (2006) highlighted the success of telecenters in East Africa (Uganda, Kenya, and Tanzania) that provide rural and peri-urban communities with access to information and communication technologies with the support of international organizations like UNESCO, the International Development Research Center, and the International Communication Union. In the long term, however, such telecenters would need to be self-sustaining through the provision of useful information resources for which local residents are both willing and able to pay. National telecenter networks now exist in many developing countries, including in Africa. Established in 2007, the Southern African Telecentre Network (<http://www.satnetwork.org>) is a nonprofit organization providing opportunities among national telecenters for regional knowledge sharing, information exchange, and networking.

Libraries have a history of promoting users' and creators' rights and negotiating copyright issues in a library setting and can discuss with local communities questions about individual or communal rights. The copyright and intellectual property rights issues that are included in the United Nations Declaration on Rights of Indigenous Peoples (United Nations Permanent Forum on Indigenous Issues, (2007) can be addressed in a library setting. The library setting provides a neutral place and can serve to break down social and gender stratification, especially in rural areas. According to Lor (2004), libraries can assist with the discovery and recording of knowledge, organize it for use, and promote its appreciation, including respect for the communities that produced it.

The outreach function of the library is in step with the WSIS Action Plans that speak to access for all, capacity building, and development of local content in the vernacular (WSIS, 2003). In addition to the preservation and protection of knowledge, libraries have responsibilities, through their outreach programs, to provide accurate information about not only desirable cultural practices but practices that may have negative consequences for people and the environments in which they live. Libraries also have a role to play in continually engaging with and mobilizing communities through participation in cultural events, social functions, exhibitions, craft workshops, fairs, and other activities that contribute to successful documentation and preservation of indigenous knowledge.

The introduction and expansion of social media technologies create new opportunities for development agencies, businesses, NGOs, and information agencies, including schools and libraries, to partner with rural communities, national governments, and social entrepreneurs to create, manage, and preserve knowledge and skills that are unique to communities in East Africa. To help communities create, access, and share knowledge, librarians and information agencies need initial training and ongoing professional training about the importance of indigenous knowledge and how to document indigenous knowledge using social media and old technologies.

Conclusion

There is a growing consensus that indigenous knowledge is crucial to the social and economic development of Africa. However, this knowledge is in danger of disappearing if proper steps are not taken to document it, preserve it, and make it accessible to current and future generations. The World Bank's emphasis on knowledge as key to sustainable economic and social development requires, as well, the recognition of indigenous knowledge as a contributing factor in sustaining local livelihoods in East Africa.

"Good parents give their children both roots and wings" is a quote attributed to Jonas Salk. In the context of Africa, where a large proportion of the population in every country is younger than 15 years of age, this quotation takes on considerable significance. Social media are like the wings that allow youth, whose futures will increasingly be dominated by new technologies, to flex their creative minds. However, it is important to ensure that the rapidly emerging information society does not deliberately or inadvertently deprive them of the indigenous knowledge that is their birthright. In this article we have explored ways in which social media and other electronic technologies can be employed to give the children of Africa both wings to fly and roots to anchor them securely in the rich cultural landscapes of their homelands.

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