



**COMMUNITY KNOWLEDGE CENTERS FOR LIBERIA:
Meeting Africa's Millennium Goals through a Unique Collaboration of Communities, Universities, Libraries, and Schools for Liberia's Economic & Social Development**

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Abstract:

In this paper we propose to develop a network of Community Knowledge Centers for Liberia. It will involve a partnership between Rutgers University, University of Liberia, Cuttington University, Booker T Washington Institute (BWI), the Open Learning Exchange (OLE) and the National Public Library of Liberia (in its infancy), in cooperation with the Liberian Government Ministries of Agriculture and Education. Because of the major focus on rural communities, Cuttington University, a center for excellence in Agriculture and well established programs in Nursing and Education makes sense as the center of a national network that will involve the coordination of CKC systems and open education resources (OER) and that promotes active collaboration between libraries in Liberia and throughout the world. The Project is projected to cover a five-year period with an estimated cost of five million dollars. The needs of Liberia are great as it is a country where there is a high rate of illiteracy particularly of women, poverty, an economy based on agriculture but without up to date agriculture practices, and a need for developing new learning environments and access to information and libraries. Community Knowledge Centers offer a solution to help alleviate many of these challenges and provide opportunities for economic and social development.

1. BACKGROUND

Liberia is at the crossroads. Still recovering from a protracted civil war, there is inadequate education, high illiteracy rates particularly for women and where the population is 90% food insecure. Libraries are non-existent outside of universities at which libraries are woefully inadequate. Through various initiatives Rutgers University and others are working to help develop a 21st century workforce in the country. However, a 21st century workforce requires access to 21st century information and libraries play an essential role. The focus on libraries is being developed on several fronts. Although several initiatives are taking place, each of these is a thread that together can form a fabric of hope for a country with extreme poverty yet rich in natural resources. Each of these threads focus on meeting the UN's 2015 Millennium Goals but for these programs to be successful, libraries are essential to weaving these threads together. A multipronged approach is needed to build an Information FREE way for Liberia that includes access to information resources either via the Internet or a library in a box or library in a flash (on a flash drive), tablets, smartphones and other mobile devices, skilled professionals in agriculture and engineering and libraries and librarians

A. Geographical, Agricultural, Engineering, and Economic Context

Geography, engineering and agriculture information are intertwined. If you cannot build adequate roads, farmers cannot get their produce to markets. Natural resources and geographical data are quite pertinent to the current conditions of the economy of Liberia. From the US Department of State website, Liberia is rich in natural resources. According to this source, there are three geographical areas: "Mangrove swamps and beaches along the coast, wooded hills and semi deciduous shrub lands along the immediate interior, and dense tropical forests and plateaus in the interior. Liberia has 40% of West Africa's rain forest." (Bureau of African Affairs, US Department of State, 2011.) The annual average rainfall in Liberia is 2,391 mm (94"). "Although this is much higher than the quantity of water required for crop growth, an acute water deficit is experienced anyway during a 3 to 5 month period, particularly in the uplands." (Encyclopedia of Earth, 2011.)

According to US Department of State data, agriculture accounted for 61% of the GDP (Gross Domestic Product) in 2009. Primary agricultural products are listed as coffee, cocoa, sugarcane, rice, cassava, palm oil, bananas, plantains, citrus, pineapple, sweet potatoes, corn and vegetables. The remaining non-agricultural industries are rubber, diamonds, gold, iron ore, forestry, beverages, and construction. The primary non-agricultural product is rubber, which in 2009 produced \$148 million in trade exports "The Liberian economy relied heavily on the mining of iron ore and on the export of natural rubber prior to the civil war. Liberia was a major exporter of iron ore on the world market."(US Department of State) During the civil war, which lasted from 1989 until 2003, production of iron ore stopped, and timber and

diamond exports from Liberia were banned by the United Nations. These sanctions were lifted in 2006 and 2007, respectively. (US Department of State)

The US Department of State projects that Liberia's economy will continue its current rate of modest growth. "The country's revenues come primarily from rubber exports and revenues from its maritime registry program. Liberia's U.S.-owned and operated shipping and corporate registry (LISCR) is the world's second largest... its Liberian-flagged vessels carry more than one-third of U.S.-imported oil. There is increasing interest in the possibility of commercially exploitable offshore crude oil deposits along Liberia's Atlantic Coast." (US Department of State)

Although Liberia has a foundation of abundant natural resources, it remains economically challenged by several factors. "Productive capacity and sustained economic growth are depressed by high unemployment, low literacy, poor health, corruption, and the absence of basic infrastructure such as adequate roads and water, sewage, and electrical services...just 25% have access to safe drinking water, and only 36% have access to proper sanitation...The costs of rebuilding damaged infrastructure are enormous." (US Dept. of State) Hydroelectric power was a primary source of electricity for Liberia until 1990, when its main power plant was bombed and electric power was cut off. In a report on the Liberia Electricity Corporation, the World Bank reports that "The country's prior generation capacity of approximately 180 MW and accompanying distribution network was totally lost, and as a result commercial electricity services in the country were non-existent. The state power company, Liberia Electricity Corporation (LEC), had no infrastructure, no fuel source, and no customers. In 2007, with 2 MW of imported generators, the LEC was revived and started commercial operation with 450 customers and a row of streetlights for the first time since the war. Since then, generation capacity has been increased to 10MW and the transmission and distribution network has been expanded." (International Finance Corporation, World Bank, June 2011.).

In dealing with poverty reduction, rural farmers, market women, and families are essential to Liberia's economic development. Outside of the city of Monrovia, the rest of Liberia is rural and it is here that most of the agriculture takes place. In order to improve the lives of these families, they need education and advice on appropriate sound sustainable agriculture practices. Much of these rural families are illiterate and do not have access to education, libraries, and important information that can improve their livelihoods. A draft report from the Minister of Agriculture (2009) reported on a Back to the Country Agriculture Initiative as part of the country's poverty reduction strategy. Specifically mentioned are the agriculture programs at University of Liberia and Cuttington University to "establish a multiplier base for micro-enterprise development in each of the 14 counties of the country." Some of the issues mentioned are land availability and ownership, land use and farming, low incomes, need for training and technology transfer, HIV/AIDS, unstable prices, transportation and marketing. There is also a need for development programs attractive to resettling citizens into rural areas.

According to this draft report, 90% of the Liberian population is categorized as food-insecure. There is definitely a compelling need for proper nutrition based on the link between food supply and available incomes. According to the World Bank, 58% of women are illiterate. There are no public libraries in Liberia and Liberia is one of only a handful of countries without a national library. The World Development Indicators Database gives the statistic that 47% of girls are not in primary schools.

A 2011 Minister of Agriculture program discusses plans for the decentralization of functions and to open offices in each county of the country reaching out to farmers to enable them to become self-sufficient in food production. A technology transfer center will train farmers how to use machines and other farming implements and help them process their produce in a way that adds value. The idea of Community Knowledge Centers is a formula for success in education, sustainable agriculture practices, health and nutrition awareness, eliminating illiteracy and providing access to libraries and information. As part of this report, a technology transfer center will train farmers how to use machines and other farming implements and help them process their produce in a way that adds value. If we add to this initiative: extension, education, libraries, social and gender issues, we have developed a formula for success in education, sustainable agriculture practices, health and nutrition awareness, eliminating illiteracy and providing access to libraries and information.

B. Presidential Initiatives

In the annual message to the 53rd National Legislature on March 23rd 2012, President Mrs. Ellen Johnson Sirleaf stated the necessity of investing, educating and providing equal opportunity to young people. Liberia has one of the youngest populations in the world with 60% of citizens under the age of 35. In such a young country Liberian youth will be the driving force behind the nation's development and socioeconomic growth.

Liberia's president Ellen Johnson Sirleaf has been instrumental in developing a National ICT Policy (http://www.lta.gov.lr/doc/ICT_TelecomPolicyHeader.pdf). A major focus of this initiative is to create products and services to reach more people over great distances and at an affordable cost to those that need them most. According to President Johnson-Sirleaf, the vision is for Liberia to become a globally competitive knowledge and information society where lasting improvement in social, economic, and cultural development is achieved through effective use of ICT.”

C. Technology Initiatives

A few months ago, the submerged fiber optic cable, known as “ACE,” reached the shores of Liberia from Europe. With access to the Internet, the world of information will be available to students and teachers and for many; there will no longer be a digital divide. However, that prospect may be at least two years away to reach the new Fendell University of Liberia Campus that is almost 20 miles outside of Monrovia and even longer for Cuttington University that is 3 hours away.

But, because access to the Internet or even electricity in rural communities in Africa is uncommon, besides a digital learning divide in Africa, there exists a gender divide in the access to and use of technology, despite the fact that women in sub-Saharan Africa grow 80-90% of the food, (Weisfield-Adams, 2008) and there were 138,000 women-owned small to medium enterprises in sub-Saharan Africa in 2009 (Mastercard Worldwide Insights, 2010). This technological seclusion from beneficial information, coupled with the fact that women are traditionally under-represented in the STEM areas globally, serves to widen the information gap. Because mobile phones are an easily understood and generally accessible technology, it is important that they are used to reach this underserved population, to provide information which will be beneficial not only in their everyday endeavors but as a tool to facilitate and encourage learning at all levels of education.

In Africa, only about 26% ...know what the Internet is and less than 10% use it.” This is due mostly to the high cost of computer ownership, lack of computer skills, slow connections, and the high cost of Internet access. Additionally, lack of electricity is a factor in some areas (Gillwald, Milek, & Stork, 2010). Conversely, mobile phone ownership in Africa is booming, with about 500 million users across Africa, or roughly half the population. The lack of Internet access there has facilitated the swift uptake in adoption of mobile phones, and has actually driven innovative uses for them such as mobile banking, which preceded current mobile banking use in the United States (Fox, 2011). “By the year 2015, the mobile network will break the electricity barrier in more than four major regions. Sub-Saharan Africa will have more people with mobile network access than with access to electricity at home.” (Cisco, 2011). Africa is now second only to Asia in the use of mobile phones, and a report by the Groupe Speciale Mobile Association of London estimates that mobile phone usage in Africa will grow to 735 million users by the end of 2012 (Davis, 2012).

According to Denise Nicholson (2011), “Africa has the highest growth rate of mobile phones in the world. Africa is book poor but cellphone rich.” Mobile phones are currently being used successfully in Africa and in other developing countries to share information in the areas of health, agriculture, and as a tool for commerce. Liberia is well positioned to leap frog limited landline phone services to cellphones that are ubiquitous throughout the country. Cellphones which at \$20 each are inexpensive and are run through the purchase of scratch

cards and offer rates at 9 cents per minute within the country and are only 5 cents per minute to the United States, Canada, and China. They even include flashlights.

Adoption of mobile phone technology for the purposes of gaining information relevant to agricultural or business pursuits has been slow to take place. In their study of libraries, cybercafés, and telecenters in twenty-five developing countries, Gould and Gomez (2010) found the need for trained community intermediaries to help facilitate technology usage and information dissemination. Public librarians could fill this role, either as a connection to, or even a form of, Community Knowledge Worker. This proposed model is described in a 2010 study of information needs in agriculture, where “The information would flow from research libraries to the public libraries, then from public libraries to designated gatekeeper farmers. Although most farmers are illiterate, a number of literate gatekeepers can be identified and encouraged to carry necessary information to the less educated workers.” (Aina, 1991).

Technology in general has been widely embraced in Africa, and many view it as a means of economic salvation, but it is apparent that there is still a lack of basic resources there that inhibits technological growth. Limited access to electricity, computers, and the Internet have prevented technological growth in the past, but innovative uses of mobile phones have done much to work around this. Additionally, basic needs that have found to be lacking are adult literacy and training in English as a second language, which prohibit some from utilizing mobile phone technology to the fullest. Much still needs to be done so that technology is accessible by the very poor, and especially by women. Training of women teachers, librarians and faculty in the use of computers, the Internet, and mobile phones would be a first step toward ensuring equitable access to technology. Further encouragement of women in the STEM areas by providing educator role models in tertiary education would be an additional step toward continuing equity.

D. Education and Information Resources

One of the major initiatives Rutgers is working on is the USAID EHELD (<http://liberia.usaid.gov/EHELD>) Project (Enhancing Higher Education for Liberian Economic Development). Through EHELD, a center for excellence in engineering is being established at the University of Liberia and a center for excellence in agriculture is at Cuttington University, three hours outside of Monrovia. A very collaborative approach was taken between researchers and a librarian to develop the new curriculum for the new College of Agriculture and Sustainable Development (CASD). The focus of the new curriculum is to promote agriculture research, training, and technology transfer through service learning and outreach to promote sustainable agroforestry development, community enrichment and human development. The mission of CASD is to promote the development of human capacity, resources, and skills required to solve critical agricultural and natural resources

challenges of Liberia and undertake interdisciplinary academic demand-driven research and outreach programs in agriculture and natural resources for sustainable development.

A second USAID educational program that Rutgers University is involved with is PROSPER (People, Rules and Organizations Supporting the Protection of Ecosystem Resources). The aim of PROSPER is to conduct livelihood activities related to non-timber forest products; and to support the development of educational curriculum and capacity building in the forestry sector of Liberia. The objectives of PROSPER are to expand educational and institutional capacity to improve environmental awareness, natural resource management, biodiversity conservation and environmental compliance; improve community-based forest management leading to more sustainable practices and reduced threats to biodiversity in target areas; and to enhance community-based livelihoods derived from sustainable forest-based and agriculture-based enterprises in target areas.

(<http://www.businesswire.com/news/home/20120530005152/en/Tetra-Tech-Awarded-20-Million-USAID-Program>)

Education and academic libraries are an essential aspect of both EHELD and PROSPER. When an average science textbook costs \$200 plus shipping costs, having access to hundreds of free text books via tablets that have greater versatility in providing mobile applications, tutorials, and courseware makes sense and with rapidly decline of prices, are a real alternative for countries like Liberia. Even cheaper ebook readers with several free open access textbooks can be loaned through a library.

With Internet access, through the Research4Life initiative of major UN agencies (research4life.org), WHO, Agora, UNEP, and WIPO, over 2000 full-text journals covering health, agriculture, environmental sciences and technology are freely-available to World Bank Band 1 countries such as Liberia. There is also a wide range of open access journals available through the Directory of Open Access Journals (doaj.org) and the African Journal Online Project (ajol.org). The effect is that Liberian students and teachers can have the exact same access of information resources available in the sciences at Rutgers University for free whereas Rutgers University pays several million dollars per year for the same information.

But because of a lack of Internet access in Liberia, Rutgers Libraries obtained a grant from the Engineering Information Foundation to develop the EAKO System (Enhanced Access to Knowledge Offline). Besides the lack of Internet access, there was a serious lack of resources for engineering students and researcher at the University of Liberia. EAKO is an open source platform with access to freely available open access journals, ebooks, and courses without the need for Internet access and is delivered on a hard drive as a "library in a box." EAKO, based on the California Digital Library's xtf software, can be used for both scholarly research information and other full-text content such as ebooks, courses, and other materials that can be used by both researchers and students.

Although it has been developed for engineering, EAKO can be used for access to any subject information. For developing countries such as Liberia with little or no Internet connectivity, mobile solutions are ideal. Once developed, offline libraries consisting of important electronic books, unique agriculture information from AgNIC (Agriculture Network Information Center, agnic.org), open education resources, and other subject areas can easily be created.

We are also beginning to partner with OLE, The Open Learning Exchange (ole.org) a philanthropic organization that provides a platform known as BeLL, the Basic e-Learning Library. The BeLL, based on Drupal, is an open-source content management system that includes open education resources and teaching materials where the focus is on developing Activity Based Learning, student interaction, and teacher and community engagement. It is designed to work off the Internet, as well as connected to the Internet and does not require electricity by running on a solar panel or car battery.

Education and other information resources can be focused on content that is country-specific. This involves teacher/faculty/community engagement and development at all levels for continuous learning. The emphasis includes creation of local content, such as a student-edited local newspaper, that is also shared throughout the network. The BeLL contains thousands of books, courses, video and interactive media that can teachers and others select as well as provide their own materials and those from students

BeLL provides data concerning the amount of use, comments and ratings of individual resources that can be shared with content managers and creators as important feedback that can be used to improve their value. BeLL has been successfully implemented in several developing countries including Ghana, Rwanda, and Nepal. Dr. Richard Rowe, president of OLE is extremely interested in partnering with this Project in Liberia that are ready to use the BeLL system to provide important knowledge resources to remote areas of the country.

E. Libraries – The Missing Link

But the missing ingredient for all these initiative is libraries and librarians. Having access to information is one thing but bringing together people with the information they need is a critical task of librarians. Librarians provide a sound knowledge of resources online via the Internet and those available offline in agriculture and how to package this information to make it accessible to decision makers, agricultural extension experts working in rural communities, to farmers, industry, and other involved in agribusiness.

There is definitely an interconnectivity of all types of libraries. For example, research information gets transmitted to public libraries that in turn provide outreach to those that need the information such as farmers. The major obstacle to developing a 21st century workforce is the lack of libraries and trained staff. Many educated people in Liberia are not aware of the many ways that libraries empower individuals and that they do not only connect people with information but connect people with people with information. The lack of a national library and public libraries, and woefully inadequate academic libraries adds to the poor state of library information services and literacy, information literacy and competencies in Liberia.

Libraries today are both a place and a space. They are buildings that provide a place to read, share stories, and learn about computers and information. They provide comfortable areas to study for students and a place for adults to learn to read. Libraries are learning environments for children to be introduced to books for the first time. Libraries can also go to wherever individuals in the community are through mobile devices whether it is a cell phone, smart phone or other mobile device, television, kiosks in the village, or a donkey cart used as a mobile library to rural communities.

Public libraries are non-existent and in Liberia the role of libraries is undefined or a foreign concept. There is virtually no publishing industry and the cost of books are high especially when taking into account shipping costs. Plus a reading culture is absent. Many gift books are irrelevant to needs. In other countries in Africa where public libraries exist, many members of local communities are illiterate, and lacking in access to technology. A study of Nigerian public libraries calls for the “repackaging” of information by librarians into a format that would meet the literacy levels of the community members. This would involve providing materials in visual, oral and electronic formats. Dissemination of repackaged materials would be conducted through audiovisual means such as meetings, talks, demonstrations, slides, or any other multimedia format (Okiy, 2003).

Librarians provide leadership in the use of technologies not only for information access but also to support teaching and research and are quite adept in the use of instructional technologies. Outreach by public libraries to achieve literacy in their communities should be constructed to include women, who are often lacking in basic skills, and are more frequently without access to technology than men. In keeping with the UN Millennium goals of promoting gender equality and empowering women, public libraries would need to focus not only on accessible and appropriate technology, but also on the information needs of women. This might include information about work, finances, women’s health, agriculture and nutrition (Forsyth, 2005).

Librarians in Africa, as they are in other parts of the world, are in a unique position to capitalize on the changes afforded by the Internet and mobile technology. Outreach is sorely needed by this group in order to assist in the uptake of information access that is about to

become available to many in Africa when smartphones become more accessible. Information literacy will become an important aspect of their services to those who have never been exposed to the Internet, but before this happens librarians in Africa will need to embrace the existing mobile phone technology as a way to share information.

Text reference is the most appropriate way to do this, as texting is the most widely used teaching and information-sharing tool at present. Librarians might adopt the model currently being used in agriculture by the Community Knowledge Workers program, by reaching out to teachers in primary and secondary schools, as well as university faculty in a variety of academic areas, by demonstrating text reference as a way to obtain information.

The lack of professionally trained librarians (MLIS American Library Association accredited or equivalent) is a serious lack in the country. The few that exist have not kept up to date with trends and technology due to the same isolation that has existed for teachers and students. In Africa, there are several strong library networks. Besides the presence of IFLA and a very active Africa Section, there is even an active chapter of African agriculture librarians through IAALD. Up to now, the few professional librarians that exist have not been connected to these initiatives and are unaware of the ways libraries empower individuals. Libraries are no longer about books, they are about information, and connecting people with people with information. Libraries are active in developing information literacy skills – critical thinking about information that are important skills for life long learning. A critical lack in Liberia is that no National Library exists, although there is a Center for National Documents and Records and the librarian there, Forkpa Kemah, originally the librarian at Cuttington University has developed a proposal for the establishment of public libraries.

Having good teachers working in partnership with librarians creates students that are better prepared for universities. They develop lifelong learning and workplace skills and this also increases the retention rate of university students that has been a problem at both the University of Liberia and Cuttington University. Attracting students to engineering and agriculture and especially under-represented groups such as women, is directly related to good teachers in the schools. The Internet will make more connections possible between teachers with colleagues in other countries and within Liberia, as it will do for librarians.

2. THE PROPOSAL

The Development of Community Knowledge Centers: A new paradigm for socioeconomic development in Liberia

This Proposal is for the development of a sustainable network of Community Knowledge Centers throughout Liberia. Such Centers are an innovative approach to providing vital and sustainable open knowledge resources to remote communities throughout Liberia. We envision Information “freeway” that links Liberia’s two major universities, University of Liberia and Cuttington University with Booker T Washington Institute, a prominent vocational college that trains high-level agriculture and technology workers and a teachers college at Kakata. The Project will focus on three major rural areas: Carysburg, approximately 20 minutes from the campus of the University of Liberia at the edge of Monrovia, Gbanga, a very large community that is 15 minutes away from Cuttington University and Kakata, where both BWI and a national teachers college are located. This Project will require five years and approximately US\$ 5 million to bring to the point that it is sustainable by the Liberian government. Funding is actively being sought with the understanding that the Liberian government with an increasing level of financial support over the five-year period will formally endorse it.

Using the BeLL environment from OLE and existing schools and community leaders in rural communities, new modes of learning and libraries of information including Wikipedia and Khan Academy courses will be established in an rich environment that can include resources for teachers and for learning by students and adults for basic literacy, information literacy, computer and technology literacy and civic literacy.

A team of agriculture extension agents and community librarians will support the Project by providing information on sound sustainable agriculture practices, the development of micro-franchises, information on health and social services, and literacy training. Key to the success of this Project and the day to day running of the BeLL system are community leaders who will be responsible to work alongside extension agents and library paraprofessionals and teachers.

Training of agriculture extension agents and librarians will come from the two major universities in the country. The Center for Excellence in Agriculture’s new curriculum at Cuttington University includes training in extension services, rural development, agribusiness, gender, as well as the development of information and computer literacy. A trained agriculture librarian with an MLIS degree who has expertise in the delivery of agricultural research provides information support.

Content will be available via offline full-text databases such as TEEAL (The Essential Electronic Agriculture Library) that includes research journal articles from over 300 journals beginning with 1993 and EAKO that will include freely available ebooks, ebooks from

publishers willing to donate their content and freely available courses as well as other courses offered by publishers that have been donated for this Project. Where Internet access is readily available in Monrovia and surrounding communities, extension agents and librarians can make use of the full-text Research for Life full-text databases from various UN agencies that include AGORA (agriculture from FAO), OARE (environmental resources from UNEP), HINARI (health information from WHO) and ARDI (applied research from WIPO). An EAKO system will also be developed for practical agriculture information from large full-text repositories such as AgNIC, along with information on health, education, and library information.

Another technology to be employed is the use of cellphones and texting, which are ubiquitous throughout Liberia. For literate farmers, programs can text information to many cellphones at once with important agriculture information such as market prices, pests and diseases, as well as critical health and nutritional information.

Also to support this initiative, the Associates Degree program at the University of Liberia will be revised with a new curriculum that includes a focus on rural communities, teaching of literacy skills, and the provision of agriculture, health, socioeconomic, and other information. Besides the EHELD centers for excellence for agriculture and engineering, other USAID initiatives are establishing centers for excellence in life sciences and in mathematics at the University of Liberia. The health sciences library at the University of Liberia serves as a model of what is possible through a large collaboration that included the Italian government, the Medical Library Association, University of Massachusetts, Georgetown University, and Howard University and will now also include Indiana University through their USAID center for excellence project in the life sciences. Although this initiative has included new content and improved workflows, a trained professional librarian on-site has not been part of the equation.

This Project requires at least one agriculture librarian with a Masters degree in Library and Information Science, based at Cuttington University. This individual will be well versed in both agriculture extension services and libraries. There is a senior student in the current agriculture program at Cuttington University who will shortly graduate, is quite passionate to become an agriculture librarian but so far funding for him to attend a Masters level program in library and information science has not been found.

This Project expands free access to rich e-content and training in information and computer literacy. The synergy of working across many different institutions and the creation of the Community Knowledge Development Centers demonstrate a unique opportunity to reach out to students (both boys and girls) at a young age about the importance of the sciences, the value of information, and the development of critical thinking skills. This Project will attract and retain students, in particular young women who are under-represented, into agriculture

and technology careers, and better prepares them for advanced education at BWI, Cuttington University, and the University of Liberia. All these initiatives demonstrate the need for funding and attention to libraries in Liberia and their role in learning and providing information to the communities they serve: university students, middle school and high school students, vocational college students and to all the communities that exist on the proposed Liberian Information Free-way.

The goals of the Project will be to establish a Liberian network of sustainable Community Knowledge Centers that:

1. Provide expertise from teachers, librarians, agriculture extension agents, and information resources into rural environments.
2. Provide models of access to learning without the need for the Internet or even electricity
3. Provide literacy training, libraries, technology, and agricultural and health information for both children and adults
4. Empower and provide outreach to under-represented groups such as young women to pursue further education.
5. Provide research information for scientists, librarians, and teachers, along with resources for families in rural communities, using the EAKO (Enhanced Access to Knowledge Offline) platform

This Project jump-starts access to learning and information using appropriate technology. The overarching mission of all these goals is to increase capacity for reading, information, and computer literacy, outreach to families, in particular, young women to pursue further study and libraries as catalysts to develop a 21st century workforce in Liberia. Sustainability opportunities, evaluation, and dissemination efforts will be integral to this Project.

To support these Community Knowledge Centers will be teams of agriculture extension agents and community librarians that will visit these centers on a scheduled basis. Local teachers and community leaders will be involved in the day to day running of the Centers. The extension agents and librarians will be trained at the two universities and libraries we are working with that will serve as the core information and research centers with a wide array of information resources and specialists to support his initiative. Rural communities in any developing country could use the model.

For further information about the Community Knowledge Center Project, contact: Martin Kesselman (martyk@rulmail.rutgers.edu).

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References

Aina, L. O. (1991). Information for Successful Agriculture. *World Libraries*, (2)1, Fall 1991. Available http://www.worlib.org/vol02no1/print/aina_print.html

Bureau of African Affairs. (July 1, 2011). *Background Note: Liberia*, United States Department of State. <http://www.state.gov/r/pa/ei/bgn/6618.htm>

Cisco Systems. (2011). Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, http://newsroom.cisco.com/ekits/Cisco_VNI_Global_Mobile_Data_Traffic_Forecast_2010_2015.pdf

Davis, M.R. (2012). AFRICA: Mobile Devices Address Equity Issues. *Education Week*, 31 (19): S6-S8.

Forsyth, E. (2005). Public Libraries and the Millenium Development Goals. *IFLA Journal* (31) 4: 315. ifl.sagepub.com/content/31/4/315.full.pdf

Fox, K. (2011, July 23). Africa's mobile economic revolution. *The Observer*. <http://www.guardian.co.uk/technology/2011/jul/24/mobile-phones-africa-microfinance-farming>

Gillwald, A., Milek, A., & Stork, C. (2010). Gender Assessment of ICT Access and Usage in Africa. *Research ICT Africa*. http://irneasia.net/wp-content/uploads/2010/09/Gender_Paper_Sept_2010.pdf

Gould, E. & Gomez, R. (2010). Community Engagement & Intermediaries: challenges facing libraries, telecentres and cybercafés in developing countries, <https://ideals.illinois.edu/handle/2142/19429>.

International Finance Corporation, World Bank Group. (June 1, 2011). *Liberia: Liberia Electricity Corporation*. World Bank Organization. <http://tinyurl.com/3qbl49r>

Johnson Sirleaf, Ellen. Annual message to the First Session of the 53rd National Legislature of the Republic of Liberia, *Reflecting the Past, Claiming the Future*. The Liberian Daily Observer, 01/24/2012.

Mastercard Worldwide Insights. (2010). Women-Owned SME's in Asia/Pacific, Middle East and Africa: An Assessment of the Business Environment,

<http://www.masterintelligence.com/upload/251/178/MC84-WomenSME-S.pdf>

Ministry of Agriculture, Liberia. Department of Regional Development, Research and Extension (2009). *Presidential Back-to-the-County Agriculture Initiative (DRAFT)*.

Nicholson, Denise (2011). Mobile technologies – information on the move – a perspective from South Africa. M-Libraries Conference, Brisbane Australia, May 2011, see presentation from <http://www.usq.edu.au/m-libraries/program/confprogram>

Okiy, R. B. (2003). Information for rural development: challenge for Nigerian rural public libraries. *Library Review*, 52 (3):126-131

Water Profile of Liberia. (n.d.) *Encyclopedia of Earth*. Retrieved July 31, 2011, from

http://www.eoearth.org/article/Water_profile_of_Liberia

Weisfeld-Adams, E. (2008). Factsheet: Women and Food Security. *The Hunger Project*.

<http://www.thp.org/system/files/Factsheet+on+Women+Farmers+and+Food+Security.pdf>