Towards a new paradigm of LIS training for Agricultural Librarians in Zimbabwe: Challenges and Opportunities

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Abstract:

Education and training of agricultural librarians is central to the development of an efficient agricultural system because realization of socio-economic stability and sustainable development is anchored on access to information. Zimbabwe is an agro- based economy and as such the education and training of Librarians with requisite knowledge and skills to contribute towards increased agricultural productivity is of greater importance. The realization of the United Nations' millennium development goal number one "Eradicate extreme poverty and hunger" is dependent upon the extent to which a country invest in the education and training of proficient and efficient agricultural Librarians or information professionals. The lack of a clear and robust agricultural information dissemination system in Zimbabwe, just like any other third world country shows that there is a need for a paradigm shift in the education and training of agricultural librarians so that new systems are developed to address contemporary challenges in the generation, collection, organisation and dissemination of agricultural information. This onerous task lies on LIS schools to come up with new models of education and training agricultural information practitioners that address contemporary issues to do with access to agricultural information by rural populace whose livelihood is entrenched in farming. This paper will examine education and training needs of agricultural librarians, challenges and opportunities and the prospects of developing vibrant and viable agricultural information systems to foster value addition and production in an agro-based economy. It will further explore the extent to which the current training offered by Library and Information schools in

Zimbabwe is in tandem with the on the job requirements of agricultural librarianship and to what extent does this training incorporate Agricultural Information services. The paper will further expose the extent to which stakeholders in industry and commerce namely the agriculturalists are involved or consulted in the process of curriculum review and development, with regards to the Agricultural librarianship.

Introduction

Agriculture has over the years remained highly critical activity in the socio-economic development of many developing countries and sub –Saharan Africa is classical example of the great potential that can be realised from the development of the sector to ensure realization of Millenium Development Goals (MDG's) through ensuring food security, and increased   job opportunities. Hann (1991) observed that developing countries were encountering challenges   in generating, acquiring, retrieving, processing and disseminating various types of information, for example, development planners, policy makers and researchers are incapacitated by insufficient relevant data and information to facilitate the planning, policy formulation and research processes. Africa needs to continue to develop capacity, including capabilities to further transform its agriculture to realise high economic growth momentum, reduce unemployment and poverty and ensure equal access to resources according to Africa Capacity Building's African Capacity indicators (2012). Agriculture is one of the citadels of the Zimbabwean economy because it provides many raw materials required by the industry, provides employment and also ensures food security and a healthy nation. The success of agriculture is anchored upon the renewal of library schools and effective education and training of agricultural librarians and development of full-bodied agricultural information systems and infrastructure including ICT driven libraries, learned librarians imbued with philosophy of life- wide learning.

 "Everything else can wait, but not agriculture"- Jawaharlal Nehru, (1947)

Background   of Agriculture in Zimbabwe

Geographically, Zimbabwe covers a total land area of 390,757 square kilometers, and located between the Zambezi River and Limpopo River, and shares borders with South Africa to the South, Zambia to the North, Mozambique to the East and Botswana in the West according to Chamboko (2007).The Zimbabwe National Statistics Agency *Preliminary Report* (2012) puts the total population at 12 973808 of which males make up 48.06% and females 51.94%. Agriculture is an answer to the country's economic stability and growth. Generally agriculture contributes sixteen to twenty percent of GDP and over 40 percent of national export earnings and 60 percent of raw materials to agro-industries according to Government of Zimbabwe Report (2011). The report further notes that agriculture-related official employment supports a third of the formal labour force. However the sector was adversely affected by macro economic instability during the first decade of the twenty first century culminating in hyperinflationary environment, coupled

with persistent drought, resulting in poverty and unemployment and high vulnerability for the poor but currently the sector is on rebound due to socio-economic stability brought by the 2008 Global Political Agreement dispensation and multi currency monetary regime.

The performance of agriculture is key to economic survival because it can build or shatter the economy. The country is divided into five natural regions encompassing areas suitable for specialized and diversified intensive   farming, intensive farming, semi-intensive and extensive farming. Zimbabwe's key export commodities are tobacco and horticulture, with   smaller crops such as sugar, tea, coffee, cotton, seeds, maize, and oilseeds are also exported as well as livestock, dairy products, and wildlife and poultry meat. This is why it is critical to ensure that the education and training of LIS Professionals in agriculture is given adequate attention and support since it is key to the delivery of critical and appropriate information to uplift farming amidst the adverse impact of climate change, unpredictable   weather patterns, rapid technological changes, global politics, local and international marketing and other challenges. "When you concentrate on agriculture and industry and are frugal in expenditures, Heaven cannot impoverish your state…" *Xun Zi Confucian philosopher (312-230BC)* in Ridgers (ed)(2012

The success of agriculture is dependent upon reliable access to information, which in turn is a dependent variable of national and international Library and Information systems. Modern agricultural research, development and diffusion efforts have also been partly attributed to the spread of information and the ability of researchers to access and wisely utilize research results according to Griffiths (2006). The purpose of an information service is to enable researchers, farmers and policy makers to access and utilize information to optimally enhance their research and productivity outputs in agriculture. There is a growing consensus amongst global and continental institutions, policy makers and society that agricultural transformation in Africa is critical in advancing the continental development agenda forward amidst the drawbacks and opportunities of the twenty first millennium according Africa Capacity Building Foundation (2012) and World Bank, (2012). This development is hinged upon quality of   agricultural information systems " Public institutions such as libraries and archives, cultural collections and other community-based access points should be strengthened so as to promote.... free equitable access to information'' (Shuler, 2007). To this end it becomes clear that agricultural librarians are better placed and have the mandate to come up with models that seek to collect and organise agricultural information for equitable access by all.

Agricultural Information and LIS

Thapisa (1997) attributed the weaknesses   of agricultural information situation in the SADC region to inadequately developed and stocked libraries and documentation centers, a high shortage of qualified and trained information professionals, the unclear status of library staff working in agricultural information services, a lack of basic equipment needed to provide, inadequate   e- agricultural information infrastructure, a lack of appropriate accommodation for agricultural information service departments or units, and the lack of funds to finance the development of agricultural libraries and documentation centers exacerbated by a critical shortage of foreign currency. Mohamedeli (2013) also laments that   third world countries do not

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have well established agricultural information policies resulting in inadequate agricultural information services. In an ideal situation, with everything weighing equal, agricultural information service are buttressed by adequate communication between agricultural information agencies and users. Agricultural Libraries and Librarians are the missing link between agricultural information agencies and users of agricultural information. Durrani (2008) divides third world agricultural information systems into two contradictory   systems with the first overflowing with all information on scientific farming as well as the vast resources needed to exploit the land, labour and market, while the second is characterised by technology starved, fragmented information systems relying more on non-scientific data and prone to the vagaries of nature ultimately resulting in poor yields.

Oduwole and Okorie, (2010) noted how food security is a key concern for developing countries because without it society would be annihilated by deprivation and socio-economic instability. Governments have implemented strategies to ensure   sustainable food production as reflected by enactment of laws, provision of financial and material support to ensure that farmers are well prepared throughout. The Executive Summary of the *Africa Capacity Indicators Report 2012: Capacity Development for Agricultural Transformation and Food Security Africa capacity* highlighted that food security can only be realised through developing the core capacities consisting of the enabling environment which includes the factors that determine performance outcomes.

Access to Agricultural Information is one of the countervailing factors that contribute towards increased food production. This is possible through developing viable agricultural information systems manned by highly learned, creative, innovative and effective agricultural librarians. Agricultural libraries exist for the purposes of providing access to information through conducting proper user analysis to scientifically determine information needs of active, and potential. Kaye (1995) argued that accurate information improves decision-making, enhances efficiency and provides a competitive edge. Oduwole and Ikhizama (2003) identified various agricultural related information needs of rural people namely information on pest control, marketing of produce, fertilizer availability and use, high yield crops, new farming techniques, weed control, weather, disease resistant crops and food storage and processing.

Thapisa (1997) proposed two strategies to improve the delivery of library and documentation services, firstly, the training of Library and Information personnel at professional levels and secondly the delivery of agricultural information to the end-users namely researchers, academics, decision makers, farmers, extension officers and students. Durrani (2008) states that   agricultural librarians should   break free from their colonial and neo-colonial insulation and embrace proactive approach to work by becoming vigorous disseminators of both scientific and non-scientific information useful to the local populace. This implies that they must descend from their elitist and antiquated ivory towers of exclusivity and embrace inclusivity in terms of service delivery.

LIS Education and Training : Agricultural Librarianship

Pont (2003) defines training as a process of developing students as individuals and assisting them to become more confident and more competent in their lives and jobs. The author places the learning process at the epicenter of training. LIS education and training can be classified as adult education and learning because firstly, it is formalised, institutionalised, technical and value free activity that focuses on individual trainees, educational techniques and course provision and secondly it is a complex social and value creating activity that is intertwined with the socio-economic cultural milieu according to Foley (1999). The rapid pace of social change makes it critical to develop training or continuous professional development and workplace learning strategies supported by training systems that empower individuals to cope with change. LIS education should be in sync with philosophy of liberation, empowerment and transformative power to better human and environmental conditions through provision of valuable agricultural information to improve the livelihood of the disadvantaged rural farmers. This implies that agricultural librarians trained in brick and mortar edifices whether Universities or Polytechnics should be imbued with a philosophy of freedom and justice, a high sense of creagement, practical skills on the praxis of agricultural librarianship and should descend from their ivory towers of matchlessness to serve the people first.

Wallace (1997) noted how Agricultural Education and Training (AET) in sub-Saharan Africa have been slow in adapting to new patterns of demand in the dynamic socio-economic environment of the twentieth century. The author further cites lack of proper mechanisms for identifying emerging information needs as well as, need to reform curricula to meet the demands in growing modern agricultural activity in the region. Agriculture by nature is a vast, complex and multidisciplinary subject and as such it cannot be studied effectively without the contribution of the library and agricultural librarian and an interdisciplinary approach. Agricultural Library and Information services provide multitude of services or functions for the benefit of a wider and heterogeneous clientele including researchers, policy makers and farmers according to Devarajan (2000:6).The achievement of optimal results in the formulation and implementation of development plans in Nigeria has been constrained by scarcity of reliable statistics, data and information according to Kalu (1986).The same can be said of many developing countries Zimbabwe included.

 In Zimbabwe, LIS Curriculum is offered through four institutions namely, National University of Science and Technology (NUST) in Bulawayo, which offers training at undergraduate and at postgraduate levels, Zimbabwe Open University in Harare, a distant learning based institution also offering training at undergraduate level, Bulawayo and Harare Polytechnic offer certificate and higher diplomas. These institutions provide conventional education and training. Universities offer a curriculum that is multi-skilling oriented, while polytechnics are moving towards competency-based education and training (CBET) models.
 Interesting to note is the vision of the NUST library and information school posted on their website which states that their aims are to: produce Librarians for the libraries and other information centers in the country and the region, to produce graduates who will fit in the world of IT, provide students an opportunity to do further research and study in the field of information science. This vision exposes how general the focus becomes for library schools and further

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demonstrates the caliber of students produced. The fatal nature of such a vision in this case is that it shows that the student will be ready for any type of information center and they will have to learn to adapt and operate in a given subject area which directly affects their functionality as agriculture librarians. Overally both curricular for Universities and Polytechnics is a by-product of collaboration between industry, government and higher and tertiary institutions. CBETISED and TVETISED curricular is a byproduct of the inputs of various stakeholders including higher and tertiary, government and industry triad as reflected by opportunities for On the Job Education and Training and ultimate continuous internal and external assessment. On the other hand there is provision for Continuous Professional Development and Workplace Learning (CPDWL) through workshops and other personnel development programmes in LIS. Generally education and training in LIS is a cyclic process involving analysis of training needs, planning and designing the training approach, developing the training materials, delivering the training and assessment and evaluation.

Subject specialisation in LIS

Shongwe and Ocholla, (2012) notes how emerging LIS markets are changing the LIS curriculum into an inclusive and diversified model thus leading to production of multi-skilled graduates. The authors further argue that the economical and cost effective multi-skilled approach to LIS education and training through balanced curricula will likely shape the direction for future information service providers or librarians in Africa. Currently LIS training in Zimbabwe is premised on a generalist paradigm with limited or no opportunities for specialisation. However the generalist perspective is critical in building a foundation and as students move to higher level, opportunities for specialisation should be available. Williams and Zachert (1986) attributed the fragmentation of the LIS profession to the resistance to accommodate specialisation thus plunging the profession into isolated portions anchored on a generalist paradigm and ontologies.

The advent of ICT's is helping to bring these fragmented parts together through convergence and use of shared portals for providing access to information. The ICT dispensation and improvements in the economy makes it critical for LIS educators and practioners to start thinking and planning for transition from generalist to the specialist paradigm, especially in agriculture. The knowledge economy also avails opportunities for LIS Educators in developing countries to rethink the social epistemological and ontological basis of current models of LIS Education and training. There is a changeover from the traditional straight jacketed or classical "lecture-oriented" and cognitive domain dominated training to a more learner centered approach based on reflection and emphasizing a balance between cognitive, affective and psychomotor dimensions according to the World Bank (2000b).The learner oriented approach focuses more on the learner or trainee in the learning process. Basically it is an eclectic approach determined by a learner - centered curriculum in LIS.

The seismic shifts in the professional LIS Market place, globalisation and rapidly changing technology are blurring boundaries of the profession resulting in new nomenclature for example, agricultural cyber- librarian, and agricultural information manager and digital librarian among others. Feather and Mann (1993) argued that the globalisation of information and of the techniques of information storage and retrieval has made the international element in LIS more critical than it has been previously. Shongwe and Ocholla, (2011) further note that in the current

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technology and knowledge driven dispensation LIS job market requires professionals with sound education in management, ICT's, information searching, cognitive skills to analyse and synthesise, as well as the ability to perform practical or psychomotor domain dominated work. Polytechnics in Zimbabwe are moving towards trainee centered Competency Bed Education and Training (CBET) models in LIS. Whitaker (2001) views the CBETISED curriculum as a reflection of the needs of the trainee, labour market and   the community triad.

This paradigm shift involves educating the LIS Professional in the effective utilization of the panoply of digital technology and how to conduct online searches from, both bibliographic   and full text databases like AGORA, AGRIS, AGRICOLA Food and Agriculture Organization Corporate Statistical Database, EVISA Journals Databases. The agricultural librarian should also have knowledge and skills to network through library consortia   to enable interlending and document supply and resource sharing .The specialist agricultural librarian should also have knowledge and skills to condense information through information mediation and consolidation, for example, the need to bridge the gap between research findings and their practical application by farmers. They should also know how to utilise indigenous knowledge relating to crop and animal husbandry, weather   forecasting   among others. A survey of the course content of Library schools shows that information technology based applications to agriculture such as; Agricultural Institutional Repositories, Open access and Open data for Agriculture , Agridrupal software,Meta- data harvesting and Agrovoc indexing are far from being taught yet these are the contemporary information communication based technological platforms and software.

Currently in Zimbabwe the training of LIS Professionals whether at the Polytechnic or the University   is generalised and this creates challenges for the graduates as they fall short of the prerequisite competencies critical in specialist subject librarianship. Mohamedeli (2013) in his study of Agricultural Librarianship   in Jamaica noted that most of LIS courses are devoid of the in-depth training in resources necessary   to enable one to positively respond to the complex, dynamic and specialised   agricultural needs. In Zimbabwe over ninety percent of the LIS professionals working in agricultural libraries do not have agricultural background but they have acquired the knowledge tacitly through association and continuous learning.

Question &Answer Service for Farmers at the University of Zimbabwe Library/E-farming

Project

As from the year 2006,the University of Zimbabwe library(UZ-library) in conjunction with The Technical Center for Agricultural Cooperation (CTA) based in Netherlands ,have been offering an information service called Question and Answer (QAS) to farmers, especially those domiciled in rural areas and other stakeholders in agriculture. This service operated by way of farmers mailing through post their agricultural information requests to UZ-library. Upon receiving these questions, information searches were carried out from an array of print and electronic resources available at the library, consultations with subject experts from the Faculty of Agriculture were done in an endeavor to address the information requests. When found the information was photocopied, packaged and sent back to the farmer. The contract with CTA

ended in 2008, since then the University of Zimbabwe Library has continued to provide the service though with modifications. Given the uptake of ICT'S in communication and mobile phone usage in Zimbabwe, the library through innovative initiatives towards agricultural information dissemination UZ-library offered a modified version of the (QAS) from a print based to an electronic based service for instant communication or alerts.

The idea of integrating the sms platform into the QAS was stimulated by the realization that postage was limited in effectiveness because of the following: rural farmers did not have direct access to the university library, materials posted took time to reach the farmer and there was no instant access, information via postage meant that there was no room for probing and further clarification. The materials given to farmers were in English thus they are not easy to interpret and harmonize with indigenous local agricultural information. This brought about the pioneering of the concept electronic farming (E-farming) titled Customized Information Solutions for Farmers: Promoting local E-farming

The above case at the University of Zimbabwe shows how demanding and challenging the role of the Agricultural librarian and the fact that agricultural librarians apart from supporting the institutions they serve find themselves having to play intermediary roles between research information generated at institutions of higher learning and the information needed by the ordinary small scale farmer in the rural area. As such collaborations and networking are a key aspect on the effectiveness of any meaningful agricultural librarian. Library schools should thus model their curricula around the roles and duties performed by those in the Library field or rather adopt a proactive approach.

Aina (1989) conducted a survey, which confirmed that librarians who were working in agricultural libraries did not have agricultural background and Mohamedali (1994) made similar observations with regards to the Caribbean. Axford, (1978) defined a subject librarian usually as ``someone who is intellectually aggressive or assertive and possesses restive imagination, intellectual discipline and a healthy ego that not only produces, but also sustains a self-confident elite''. Ogundipe (1983) and Aguolu (1985) have inferred that a subject librarian should be a well-trained person with the requisite subject, linguistic and bibliographic knowledge who can render services on a subject basis.

Thapisa (1997) notes how the creation of an agricultural information system in Southern Africa has helped to strengthen a regional agricultural research system to enable easy access   to information amongst policy makers, farmers and government. Southern African Centre for Co-operation in Agricultural and Natural Resources Research and Training was   mandated to maintain an up-to-date inventory of national and regional research systems in order to provide information on the research capabilities of the member countries of the Southern African Development Community (SADC).

Community centric agricultural librarianship

Aina (1989) stated that if the LIS curriculum would provide librarians with grounding in agriculture, rural development, management, and ICT's, the net result would be   an improvement in the delivery of agricultural information services to the user population.

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Simmons, and Haanongon, (1999) noted how in Nigeria the paradigm shift in the training of agricultural librarians was stimulated or triggered by the removal of Agriculture from the general (traditional) universities into specialist universities of agriculture, which then created demand for subject agricultural librarians. Eventually specialisation of agricultural education and training gradually led to the phasing out of agricultural courses in traditional universities thus impacting heavily on the library profession. The generalist has a vague idea about everything in a discipline or profession, for example, an idea about every aspect of the library profession in a specialised discipline. A subject agricultural librarian, on the other hand, is, ideally, a person who has a deep and wide intellectual grasp of the field of agriculture or some aspect thereof, as well as training in librarianship, usually at the postgraduate level. Durrani (2008) argues that all trainee librarians should be provided with basic course in agriculture and a course in awareness about the conditions in the rural areas. The author further advocates for a radical conflict theory approach whereby trainee librarians are dispatched for On Job Education and Training in rural areas to acquaint them with rural life.

Wolverton,(Jr) and. Heiselt, (2010) advocated for the incorporation of a community service-based component in the LIS curriculum. The author's further note that such approaches extends as far back as 1896 with Melvil Dewey's curriculum for the first School of Library Economy at Columbia University according to Roy (2009). Since then, a number of LIS programmes throughout the US have included a service component in their curricula for students, with LIS faculty working alongside community leaders to develop service activities.

Agboola, (2000) emphasises the importance of Information in agricultural development and production and how effective communication helps to facilitate mutual understanding among farmers, agricultural scientist and extension workers. Oduwole and Okorie, (2010) highlighted how Libraries serve as a bridge between the government's goals by developing, acquiring and providing information in both print and non-print format and enabling easier access to communities. The authors further argue that Libraries can adequately and effectively contribute to actualizing MDG1 by making information available towards poverty reduction, improvement in the standard of living and wealth creation in the communities. Libraries are engines for rural development and can be identified with community activities if proper strategies are in place.

Research and Agricultural Librarianship

Islam (2007) notes how research in agriculture contributes towards sustainability of agricultural productivity and economic development with reference to meeting the food and economic needs of the nation provide employment and preserve the natural resources. This implies that Agricultural librarians and effective agricultural information systems are central to the realisation of the ideal goals of food sustainability according to Osigwe, (1993). Modern agricultural research and development efforts have also been partly attributed to the spread of information and the ability of researchers to access and effectively or sagaciously utilize research results.

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maintain an up-to-date inventory of national and regional research systems in order to provide information on the research capabilities of the member countries of the Southern African Development Community (SADC).

Seismic shifts   in LIS education and training

ICT's are   transforming various aspects of LIS, for example, content creation, storage, access, preservation and lifecycle of documents, what is learned and how it is learned in schools. Abrizah, Hilmi , and Azeana, (2009) notes that LIS schools have   responded to the impact of ICT's in the workplace by incorporating to the existing LIS curricula courses such as Systems Analysis and Design, Database Fundamentals, Web Technologies and Electronic Publishing. The authors further state   that due to the ever increasing impact of ICT 's on LIS as well as the changing nature of librarianship resulting from the increasing amount of information available in digital format, it becomes prudent to prepare LIS students to work in the digital library environment. de Boer, A.; Bothma, and Olwagen, (2012) noted that in the advent of digital technology there was great need   to fully equip librarians with a philosophy of transformational leadership , relevant skills and knowledge to enable them deal with the demands and rigours of the digital age, and a grasp of its digital netizens. The authors further note that   the ICT dispensation media require a paradigm shift in the development of future librarians. However the authors bemoaned the lack of   clear guiding principle on how development should take place.

LIS training in Zimbabwe can be strengthened through increased investment in technology; for example, ICT's are now compulsory subjects in Higher and Tertiary education. In Zimbabwe, the ICT revolution has already taken off as reflected by significant development in the installation of ICT infrastructure throughout the country thus increasing the country's teledensity which stands at 1000% percent and mobile penetration at 97%. Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) is the body charged with regulating the sectors. This has affected the provision of telephones lines to s In Zimbabwe, the ICT revolution has already taken off as reflected by significant development in the installation of ICT infrastructure throughout the country thus increasing the country's teledensity which stands at 1000% percent and mobile penetration at 97%. The Zimbabwe Farmers Union has also begun to exploit the advantages of ICT's by using mobile technology to text to farmers to keep them well informed with regards to farm produce, weather or agro- meteorology, available markets and other critical information.   This is an advantage for LIS schools since their curricular is now technology centric as reflected by numerous libraries changing over from traditional service to web based services, for example, provision of online reference services and m-libraries.

Jain, Kaur, and Babbar (2007)   notes that use of ICT's for training LIS students and professionals is critical   in order to meet the challenges of twenty first century because countries that invests more in ICT' s will ultimately become powerful as the country prepares for the wisdom economy. Choi and Rasmussen (2006) conducted   research on academic libraries in the United States of America and recommended that LIS professional education and training programmes for digital librarians should provide for   technical skills, traditional library training, and project management skills through practical experience of a digital project.

Simmons, and Haanongon, (1999) noted that the adoption and establishment of the concept of agricultural universities in Nigeria in 1988 was meant to transform or reinvent the agricultural education and training into a viable and vibrant system with professionals equipped with practical solutions necessary for the transformation of agriculture leading to mass food production and therefore food security. The transformation of agriculture was achieved through research, training and extension between Higher Education and Government and industry. The authors further state that the process of transformation of agriculture implied changing the attitudes and practices of farmers from traditional to modern scientific agriculture.

de Boer, A.; Bothma, and Olwagen, (2012) in their research recommended the **Whole Brain model and the Herrmann Brain Dominance Instrume**nt to serve as a model and a tool to enable LIS Professionals in key positions to respectively to understand themselves and others better. This model provides LIS professionals with a holistic perspective of situation on the ground. Through coaching, mentoring and development programmes, individuals can develop thinking skills required for specific roles to which they are assigned and not become prisoners of their own thinking style preferences.

Challenges and Opportunities

Challenges that are encountered in adapting to the new paradigm of LIS based on specialisation and competency-based training is the paradigm of paralysis because there are those who are skeptical of change lest they are swept away. Generally the ICT driven world provides the LIS schools with an opportunity to see clearly beyond the current models and philosophies of education and training. It also provides opportunities with regards to employment, for example, the nomenclature of LIS will continue to metamorphose into esoteric terms like web content manager, digital librarian, information brokers and electronic resource manager among others according to Myburgh (2000). There is urgent need to inoculate the laggards in LIS against the dangerous trappings of the generalist paradigm in education and training especially given the demands of a knowledge/wisdom economy.

It takes a change of mindset to overcome the hurdles of paradigm paralysis and adjust and propel training towards new and progressive paradigms. The other challenge as well as opportunity is globalisation and ICT, because the two provide overtures for enhancing and strengthening networks and collaboration and visibility within institution and outside at international levels thus overcoming academic isolation. The other challenge, which is also an opportunity, relates to how LIS Schools providing training for agricultural librarians can cater for continuous professional development through long term and short courses. LIS schools should strive to balance between the generalist and specialist perspective in the education and training of LIS professionals. It should be noted that as global warming and climate changes increasingly affects countries in Sub Saharan Africa, the greater the need for specialists agricultural librarians who will be able to deliver the appropriate information to farmers, researchers and policy makers.

Conclusion

The *modus operandi* of teaching LIS education should move towards a learner centered paradigm that enables students to be innovative and creative. It imperative for LIS schools to welcome and embrace new paradigms that can make the profession relevant to local and

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international needs in order to propel it towards the status of a high class and reliable source of scientifically proven information for agriculture and responsive to local needs of the agricultural sector. The inclusion of an international component is critical considering globalisation, global markets, e-inclusion and global citizenry among other changes. Inclusion Agricultural librarians are key in that they manage the information gateways that provide unique information services critical for the success of agriculture and sustainable development with regards to food security. In adapting new paradigms in LIS the education and training of agricultural librarians should take cognisance of both local and global trends and the opportunities of the twenty first century economies. The labour market orientation advocates for the inclusion in the LIS system and didactics, the practical component of On Job Education and Training (OJET), which is critical in striking a balance between the academic and pracademic through synergizing the knowledge and skills acquired through education and training into a robust and progressive theory and praxis of Agricultural librarianship.

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