



Royal Tropical Institute

Information literacy training in an African university setting

***Case study of IL course development
at KNUST in Kumasi, Ghana***

**Sjon van 't Hof, Jacqueline Sluijs, Helena
Asamoah-Hassan, Kwaku Agyen-Gyasi**

KIT Working Papers Series

WPS.I3

KIT Working Papers

KIT Working Papers cover topical issues in international development. The aim of the series is to share the results of KIT's action research in preliminary form with development practitioners, researchers and policy makers, and encourage discussion and input before final publication. We welcome your feedback.

ISSN 1876-4142

Copyright

This work is licensed under a [Creative Commons License 3.0](https://creativecommons.org/licenses/by-nc-nd/3.0/) (Attribution – Non-commercial - No Derivative Works 3.0 Unported).

© Royal Tropical Institute 2010

Correct citation

Please credit the authors as indicated in the citation below.

Van 't Hof, S.; Sluijs, J.; Asamoah-Hassan, H.; Agyen-Gyasi, K. (2010)
Information literacy training in an African context: Case study of IL course
development at KNUST in Kumasi, Ghana. KIT Working Papers Series I3.
Amsterdam: KIT.

Contact the authors through

Sjon van 't Hof s.v.t.hof@kit.nl

Download

The paper can be downloaded from www.kit.nl/workingpapers/wpsI3.



Royal Tropical Institute
KIT Information & Library Services

About KIT Information & Library Services

KIT Information & Library Services offers one of the world's largest collections of scientific and popular books, periodicals, articles and maps concerning developing countries. We also cooperate with partners in the South with the aim of contributing to capacity building in information technology and information management. We produce information products and conduct research in the field of information management and development.

Website: www.kit.nl/ils

More publications: www.kit.nl/publications

Acronyms

ACRL	Association of College and Research Libraries http://www.ala.org/acrl/
AGORA	Access to Global Online Research in Agriculture http://www.aginternetwork.org
DOAJ	Directory of Open Access Journals http://www.doaj.org
EBSCO host	Database services of the publisher EBSCO http://www.ebscohost.com
eIFL	Electronic Information for Libraries http://www.eifl.net
GET Fund	Ghana Education Trust Fund http://www.getfund.org/
HINARI	Health InterNetwork Access to Research Initiative http://www.who.int/hinari
ICT4AD	ICT for accelerated development (Republic of Ghana. Ministry of Communications, 2003)
IFAP	Information For All Programme http://portal.unesco.org/ci/en/ev.php-url_id=1627&url_do=do_topic&url_section=201.html
IFLA	International Federation of Library Associations and Institutions http://www.ifla.org/
IL	Information literacy: the ability to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.
INASP	International Network for the Availability of Scientific Publications http://www.inasp.info
JSTOR	Journal Storage www.jstor.org , part of Ithaka.
KIT	Royal Tropical Institute, Koninklijk Instituut voor de Tropen http://www.kit.nl/
KIT ILS	Information & Library Services, Royal Tropical Institute (KIT) http://www.kit.nl/ils
KNUST	Kwame Nkrumah University of Science and Technology (Kumasi, Ghana) http://www.knust.edu.gh/
MoU	Memorandum of Understanding
OPAC	Online Public Access Catalogue
PERii	Programme for the Enhancement of Research Information http://www.inasp.info/file/5f65fc9017860338882881402dc594e4/perii.html
SAILS	(as in Project SAILS:) Standardized Assessment of Information Literacy Skills https://www.projectsails.org/
ScienceDirect	Online collections of published scientific research – Elsevier http://www.sciencedirect.com
Scopus	Database of abstracts and citations for scholarly journal articles http://info.scopus.com
TAIS	Training Advanced Internet Searching (training course by KIT ILS)
TEEAL	The Essential Electronic Agricultural Library http://www.teeal.org/
UCC	University of Cape Coast http://www.ucc.edu.gh/
UDS	University for Development Studies http://www.uds.edu.gh
ULSP	University Library Strategic Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization http://www.unesco.org/

Executive summary

The purpose of this paper is to provide an overview of the collaboration between Kwame Nkrumah University of Science and Technology (KNUST) library and KIT's Information & Library Services (KIT ILS) to develop an information literacy (IL) training programme. Special emphasis is placed on two issues: (1) the practicality of the Association of College and Research Libraries (ACRL) guidelines when applied to an IL programme at a university in Africa; and (2) the problem of translating the generic and rather abstract ACRL standards into specific training objectives. The paper also discusses a number of lessons learned to be taken into account when planning IL training in Africa.

The education of lifelong learners is central to the mission of higher education institutions, including KNUST. IL skills are essential to lifelong learning. Currently, some IL skills are being taught on an ad hoc basis at KNUST, often depending on the priorities of individual lecturers. There is, however, a need for the university's curriculum to include a course to equip students with the required IL skills to become self-sufficient learners. This need was recognized in KNUST's University Library Strategic Plan, ULSP 2K14 (2005).

Following the signing of a Memorandum of Understanding between KNUST and KIT in November 2007, the following activities were carried out: (1) a 3-day Training in Advanced internet Searching; (2) a workshop to draw up a plan for the university-wide introduction of IL courses; (3) a workshop to develop syllabuses for the curricula; and (4) a sensitization workshop to introduce IL to the lecturers and researchers of all KNUST faculties.

The ACRL framework is indeed a useful tool for the development of IL courses. However, having compared the framework with realities at KNUST, we recommend the inclusion of the following elements to better suit African conditions: (1) a digital library infrastructure, to be in place at an early stage, including an OPAC, subject directories, user-friendly database access, adequate training capacity, and library automation; and (2) adequate opportunities for practising and maintaining minimum information skills, not only for students, but also for faculty and library staff. Further amendments may be necessary for administrative support and pedagogy.

Since translating the generic ACRL standards into detailed training objectives and related course material can be complicated, a checklist is presented here to simplify matters. This checklist can be used to verify whether IL trainings are compliant with ACRL standards.

Finally, a number of issues are raised regarding the future expansion and further development of the IL programme at KNUST, the possibilities prospect of replicating the experience elsewhere, and the potential and modalities for establishing national IL programmes in sub-Saharan Africa. The effective introduction of IL is obviously not a simple matter. Accordingly, due attention should be paid to its multifaceted and rather complex nature. It is not advisable to scale down training during the initial introduction, lest it lose its effectiveness altogether. On the other hand, the programme can be expected to evolve as connectivity, facilities, and computer skills improve. It is recommended to exploit more fully the potential for sharing experiences between university libraries in Ghana.

Preface

The KNUST University Library Strategic Plan, ULSP 2K14 (2005:11) has as one of its strategic objectives to "... strengthen user education programmes for effective exploitation of the Library's resources". And in the plan framework it says that the Library will "draw up a comprehensive user education programme, [including] information searching skills course for users". The University Library has been carrying out a number of IL functions over the years, such as the orientation given to first year students as part of the freshers' programme. However, it has been found that this orientation does not adequately enable students to become information literate and acquire skills for lifelong learning.

Currently, some IL skills are being taught on an ad hoc basis, where lecturers ask for training in internet searching skills or require that postgraduate students, especially, are taught these skills. These courses cover only a small percentage of the student or faculty population, so no real impact is felt. It also means that a great majority of the students go through their education without acquiring these essential skills for lifelong learning. It is therefore crucial for the university's curriculum to include an IL skills course to equip students to be self-sufficient learners.

Elsewhere in Ghana, libraries of the University of Cape Coast (UCC) and University for Development Studies (UDS, Tamale) currently have IL skills training in place. The former has been running this programme for well over three decades, and the UDS started the programme when the university opened in 1993. In January 2009, a workshop was organized by the International Network for the Availability of Scientific Publications (INASP) at Winneba for selected librarians and faculty members from all state universities, polytechnics and private universities to sensitize them to the need to embrace IL training in all academic institutions in Ghana. The increasing reliability of internet connectivity has now provided the right environment for information literacy skills to take off at KNUST campus.

KNUST has drawn up a comprehensive syllabus for the integration of IL skills courses into the university's curriculum. A draft proposal has been sent to the Academic Board of the University for consideration and approval, and a sub-committee of the Academic Board has been set up to review the proposal. If approved, IL courses would be offered as taught, credit-earning courses to all students of the University from undergraduate through postgraduate levels. The objective of this initiative is to embed IL skills into students' self-directed learning.

Kumasi/Amsterdam, December 2010

Table of contents

ACRONYMS	1
EXECUTIVE SUMMARY	2
PREFACE	3
TABLE OF CONTENTS	4
1 INTRODUCTION	5
1.1 WHAT IS INFORMATION LITERACY?	5
1.2 INFORMATION LITERACY FROM AN INTERNATIONAL PERSPECTIVE	5
1.3 GHANA GOVERNMENT POLICY ON CLOSING THE DIGITAL GAP	6
1.4 INFORMATION LITERACY ON THE GROUND	7
1.5 DEFINING INFORMATION LITERACY PROGRAMME PRIORITIES	8
1.6 WORKING PAPER OBJECTIVES	8
2 THE KNUST INFORMATION LITERACY PROGRAMME	9
2.1 KNUST	9
2.2 KNUST LIBRARY	9
2.3 PARTICIPATION IN INFORMATION ACCESS PROGRAMMES	9
2.4 COLLABORATION WITH KIT	9
2.5 MAIN PROJECT ACTIVITIES (OCTOBER 2007 - JULY 2009)	10
2.6 SYNCHRONIZATION OF IL PLANNING AND SUPPORT	11
3 CHARACTERISTICS OF AN INFORMATION LITERACY PROGRAMME	13
3.1 ACRL FRAMEWORK OF BEST PRACTICES.....	13
3.2 MISSION	13
3.3 GOALS AND OBJECTIVES	14
3.4 PLANNING.....	15
3.5 ADMINISTRATIVE AND INSTITUTIONAL SUPPORT.....	16
3.6 ARTICULATION WITH THE CURRICULUM	16
3.7 COLLABORATION	16
3.8 PEDAGOGY.....	17
3.9 STAFFING	18
3.10 OUTREACH	18
3.11 ASSESSMENT/EVALUATION.....	19
3.12 CONCLUSIONS.....	20
4 IL TRAINING IN PRACTICE – COMPLIANCE WITH IL COMPETENCY STANDARDS	21
4.1 INFORMATION LITERACY COMPETENCY STANDARDS FOR HIGHER EDUCATION.....	21
4.2 OBJECTIVES FOR INFORMATION LITERACY INSTRUCTION.....	21
4.3 COMPLIANCE WITH ACRL STANDARDS	22
5 CONCLUDING REMARKS AND RECOMMENDATIONS	25
5.1 LESSONS LEARNED.....	25
5.2 FINAL CONSIDERATIONS	26
5.3 CONCLUSION	26
6 REFERENCES	27
ANNEX 1: SYLLABUS – INFORMATION LITERACY SKILLS (ILS)	29
ANNEX 2: POWERPOINT TRAINING INFORMATION LITERACY	32
ANNEX 3: CHECKLIST OF POSSIBLE COMPLEMENTARY MEASURES	35
ANNEX 4: CHECKLIST OF POINTS OF ATTENTION IN IL PLANNING	37

1 Introduction

1.1 What is information literacy?

Information literacy (IL) is the set of abilities enabling individuals to “recognize when information is needed and [...] to locate, evaluate, and use effectively the needed information” (American Library Association, 1989). IL is increasingly important in the contemporary environment of rapid technological change and proliferating information resources. Individuals are faced with diverse, abundant information choices—in their academic studies, in the workplace, and in their personal lives—because of the escalating complexity of information sources and formats. Information is available through libraries, community resources, special interest organizations, media, and the internet. Increasingly, information comes to individuals through unfiltered channels, raising questions about its authenticity, validity, and reliability. Also, information is available through multiple media, including graphical, aural, and textual modes, and these pose new challenges for individuals in evaluating and understanding the content. The uncertain quality and expanding quantity of information pose big challenges for society. Abundance of information in itself is not enough to build the information society. What matters most is having the necessary skills and abilities to effectively use information.

IL therefore forms the basis for lifelong learning. Developing lifelong learners is central to the mission of higher education institutions, including KNUST. By ensuring that students develop the intellectual abilities of reasoning and critical thinking, and by constructing a framework for learning how to learn, colleges and universities provide the foundation for continued growth throughout their careers, as well as in their roles as informed citizens and members of communities. IL is a key component of, and contributor to, lifelong learning. IL competency extends learning beyond formal classroom settings and provides practice with self-directed investigations as individuals move into internships, first professional positions, and increasing responsibilities in all areas of life.

Individual who are information literate, can:

- determine the extent of information needed,
- access the needed information effectively and efficiently,
- evaluate information and its sources critically,
- incorporate selected information into their knowledge base,
- use information effectively to accomplish a specific purpose, and
- understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

Gaining IL skills multiplies opportunities for students’ self-directed learning as they become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking abilities for the future. Information literate students necessarily develop some information and communication technology skills which are interwoven with and support IL, because it augments their competency in evaluating, managing, and using information effectively and efficiently.

1.2 Information literacy from an international perspective

In the Alexandria Proclamation of 2005, information literacy (IL) and lifelong learning were declared the beacons of the information society, whereby IL lies at the core of lifelong learning (UNESCO, NFIL, & IFLA, 2005). Lifelong learning enables individuals, communities and nations to attain their goals and to take advantage of emerging opportunities in the evolving global environment, while IL provides the key to effective access, use and creation of content to support economic development, education, health and human services, and all other aspects of contemporary societies, and thereby provides the vital foundation for fulfilling the Millennium Development Goals (Garner, 2006).

In the same proclamation, governments and development organizations were asked, among other things, to support: "(1) professional development of personnel in education, library, and information services in the principles and practices of IL and lifelong learning; (2) inclusion of IL into initial and continuing education for key economic sectors and government policy making and administration, and into the practice of advisors to the business, industry and agriculture sectors; [...] and (3) recognition of lifelong learning and IL as key elements for the development of generic capabilities which must be required for the accreditation of all education and training programmes."

It is not difficult to deduce from these general principles the main points of departure for the development of IL programmes at universities, be they in industrial or developing countries: today, students must be taught to become lifelong learners and they must be taught this by personnel in education, library, and information services who are well-versed in the theory and practice of IL and lifelong learning themselves. No matter what definition of IL one prefers, any IL programme worth the name must necessarily incorporate these elements.

1.3 Ghana Government policy on closing the digital gap

The world is currently experiencing a so-called information revolution, which is driven by rapid developments in information and communication technology (ICT). ICT plays a crucial role in contemporary society because it increases efficiency, provides access to new markets or services, creates new opportunities for income generation and governance improvement, and gives poor people a voice. This means that information and knowledge economies are generating opportunities across all sectors in most, if not all, countries. If Ghana is to move away from her current state of underdevelopment towards an information and knowledge economy, then she needs to develop and implement comprehensive and integrated ICT-led socio-economic development policies.

The Ghanaian educational system has undergone successive modifications since independence, including the Kwapong Review Committee of 1966; the Dzobo Review Committee of 1974; the New Structure and Content Education of 1974; the Education Reform Programme of 1987/88; the University Rationalization Committee Report of 1988; the Free Compulsory Universal Basic Education Programme of 1996; the Ghana Education Trust Fund-GET Fund Act 2000 (ACT 581); and lately, the Anamuah-Mensah Committee of 2007 (Darkwa, 2007).

The latest reform proposes eleven years of Free Compulsory Universal Basic Education (after age four) and four years of Senior High School. It begins with two years of Kindergarten for pupils at age four; six years of primary school; and three years of Junior High School. The reform is in line with the UN MDGs where they speak of primary education for all (goal two) and developing global partnerships for development (goal eight). Concerning the latter, target 8.F tackles the issue of making available the benefits of new technologies, especially information and communications. An innovative feature of the educational reform programmes is the recognition of the important role played by ICT, which is linked to the national broadband backbone connectivity throughout the country to facilitate the development of ICT infrastructure in schools. The reform policy emphasizes ICT on all levels of the educational ladder, offering new sources for the creation of quality jobs, wealth generation, income redistribution and poverty alleviation, as well as for rapid economic development, prosperity and facilitating global competitiveness.

To boost the above reform policy, the government of Ghana under President J.A. Kufuor adopted the One Laptop per Child policy in 2008 for the nation's primary schools, an initiative code-named the Baah-Wiredu One Laptop per Child Policy. The objective of this policy is to integrate ICT into the curriculum of schools in Ghana right from primary schools. If this policy is linked with IL from the primary level up to the tertiary level, graduates at each level will be able to access and apply information effectively and efficiently. Achieving competency in IL requires the recognition that this cluster of abilities should not be extraneous to the curriculum, but interwoven into its content, structure, and sequence.

Additionally, this curricular integration would afford many possibilities for furthering the influence and impact of such student-centred teaching methods as problem-based learning, evidence-based learning, and inquiry learning (ACRL, 2007).

1.4 Information literacy on the ground

There is a yawning gap between the high-flying visions expressed in Alexandria and the reality of IL learning at universities. This applies to tertiary institutions in the West as well as in sub-Saharan Africa, although the gap would appear to be wider for the latter. By contrasting the Alexandrian vision with the (African) reality, it is possible to clarify why IL is defined in different ways and how it is articulated in IL programmes.

International initiatives such as UNESCO's Information For All Programme (IFAP) are testimony to the enormous gap in access to information between the developing and developed parts of the world. The gap is particularly acute in the case of sub-Saharan Africa. To this gap could be added the problem of access to knowledge generated in Africa or by Africans, thus precluding its application to the full range of development problems. Meanwhile, programmes seeking to improve access to information, such as INASP's PERii (Programme for the Enhancement of Research Information) and eIFL (Electronic Information for Libraries), are now beginning to pay off (Asamoah-Hassan, Ballantyne, Gwynn, Manda, & Winder, 2005).

According to Harle (2009), the earlier problem of access of African institutions to research information has now been sufficiently well addressed, both in terms of the volume of information available and the relative affordability. He concludes that much greater attention now needs to be given to "how the resources that are now available to African university libraries are incorporated into the teaching and research activities of their researchers, lecturers and students, if access is to be translated into use, and use into a strengthened research system and a high-quality teaching and study environment." This is what Dr. Senn Breivik meant when she commented that it is time to move from "Information for All" to "Information Literacy for All" (Garner, 2006). The IL programme at KNUST as described in chapters 2, 3, and 4 is a good example of this change in emphasis.

IL training in sub-Saharan Africa is not only timely because a considerable amount of research information has become available, but also because connectivity has improved substantially. This is partly due to international initiatives since glass fibre has reached Ghana: the country is exceptional in even having a national glass fibre backbone. It is also the result of private initiatives with cheap mobiles and affordable internet access: in August 2009, 67% of the 22 million Ghanaians owned and used mobile phone numbers, representing an increase of 13% over December 2008 (GNA, 2009). Increasingly, mobile internet will become available through smart phones, other mobile internet devices, and wireless modems such as dongles providing mobile internet access when connected to laptops. The managing director of one of Ghana's major telecom providers states that: "If we want to increase internet penetration in Ghana for its socio-economic benefit with a realistic growth number, the next challenge will be educating audiences properly." (Boadi, 2010).

One of the biggest changes, described by K. Agyen-Gyasi, Richard Lamptey and Agatha Frempong (2010), among today's users of academic libraries is their reliance on technology, cell phones, photocopiers and computers. More and more, users are off campus and access the library remotely. Both students and staff are anxious to use online databases and access information from the World Wide Web. The work of librarians has changed, just as users in academic libraries have changed. The networked environment and the rapid growth of ICTs have changed the way academic libraries operate, requiring greater responsibility of academic librarians. Information literacy has become increasingly important in this changing environment.

From the perspective of the practical implementation of IL, the situation is far from rosy. Nalumuga (2005) is a teacher-librarian in Makerere University Library in Uganda. She

reports on a 3-4 hour module in information skills that was integrated in a university-wide communication skills course. It was found that the time allocated was inadequate for classes of over 100 students and results for the optional examinations were very disappointing. Nalumuga concludes that "whatever skills we are trying to impart will not have much impact on the students or their academic outcome, if conducted in the same format and in the same periods at the beginning of their academic careers, without clear evaluation guidelines, and with optional attendance."

1.5 Defining information literacy programme priorities

Most succinctly, IL is defined as the "ability to recognize when information is needed and to locate, evaluate and use it effectively" (American Library Association, 1989). For the moment, the main emphasis in the KNUST programme is on searching e-resources on the internet and in databases, because the focus is on locating needed information. Whether this is enough to prepare students for lifelong learning, remains to be seen.

It is recognized that the trend is away from short library instructions towards integrated or embedded IL training and self-directed learning. Librarians are no longer handmaidens of research, but partners with faculty staff in creating competent researchers. Faculty concerns about the reliability and usefulness of internet resources could be used to create a faculty-wide focus on critical evaluation of information. Another issue is that faculty staff often underestimate the need of students for support and training in formulating good research questions, so this aspect should be part of any IL programme.

It would appear that IL may well be defined in the restrictive way above, namely as the ability to recognize when information is needed and to locate, evaluate and use it effectively. However, it must be understood by all partners that IL is best not taught as an independent subject, but preferably in an integrated or embedded manner, in full partnership with disciplinary faculty, with proper attention given to the concept of research and what constitutes a good research question, and with the ultimate aim of preparing students for self-directed, lifelong learning.

1.6 Working paper objectives

The purpose of this paper is to provide an overview of the collaboration of KNUST's library with the Information and Library Services of KIT (KIT ILS) in the field of IL planning and training (sections 2.4 to 2.6). Two issues in particular are emphasized: (1) the practicality of the ACRL guidelines (Pausch & Popp, 2003) when used for an IL programme at a university in Sub-Saharan Africa (see chapter 3); and (2) the problem of translating the generic and abstract ACRL standards (ACRL, 2007) into specific, detailed training objectives (see chapter 4). The paper also discusses a number of lessons learned to be taken into account when planning IL training in Sub-Saharan Africa.

2 The KNUST Information Literacy Programme

2.1 KNUST

Kwame Nkrumah University of Science and Technology (KNUST) is a scientific and technical university located in Kumasi, Ghana. It was founded as the Kumasi College of Technology in 1952. In the 2008-2009 academic year it had 24,000 students. The number of students is expected to increase to about 40,000 by 2014. The six main colleges are those of agriculture and natural resources, architecture and planning, art and social sciences, engineering, health sciences, and science.



The literal meaning of the motto "Nyansapo wo san no Badwenba" in the KNUST emblem shown here is "The wisdom knot is untied by the wise child". Nyansapo or the wisdom knot is a symbol of wisdom, ingenuity, intelligence and patience. It is a revered symbol of the Akans (a major ethno-linguistic group in Ghana), which conveys the idea that a wise person has the capacity to choose the best means to attain a goal. Being wise implies broad knowledge, learning and experience, and the ability to apply such faculties to practical ends.

Student numbers are increasing strongly at a rate of about 10% annually. Because academic standards at KNUST are relatively high (KNUST is listed quite high in the comparative ranking of universities in sub-Saharan Africa), there is a large influx of Nigerian students, for example. The didactical methods used are classical and teacher-centred, although some changes towards more student-centred learning have been initiated.

2.2 KNUST Library

A university library needs a fair share of the university's resources for the maintenance and improvement of its services. The reality at KNUST does not quite correspond to this ideal situation. Only very few books have been bought over the past 10 years. Subscriptions, apart from those in bibliographic databases linked to special programmes, are very limited.

On the positive side, mention should be made of 1) the growing accessibility of information on the internet and 2) improved access to scholarly information as a result of the increased availability of bibliographic databases through INASP, IFLA, and KIT programmes. The importance of subject librarians as teachers is also gradually being acknowledged. Their role is expanding to include research skills training and information literacy education (Agyen-Gyasi, 2008).

There are three levels of staff: 1) senior members (18) of whom six are College librarians, 2) senior staff (20) and 3) junior staff (over 90). Most of the members of senior staff are qualified to train students.

2.3 Participation in information access programmes

The library, through the Consortium of Academic and Research Libraries in Ghana (CARLIGH), subscribes to a large number of databases and programmes, including Emerald, JSTOR, Ebscohost, the AGORA, HINARI, TEEAL, and OARE programmes (Asamoah-Hassan & Frempong, 2008), INASP's PERii online access programme, and Elsevier's ScienceDirect and Scopus through an arrangement with KIT. It is estimated that the library provides faculty and students with access to about 19,000 journals, of which several thousands in full-text.

2.4 Collaboration with KIT

The Royal Tropical Institute (KIT) in Amsterdam is an independent centre of knowledge and expertise in the areas of international and intercultural cooperation, operating at the interface between theory and practice and between policy and implementation. The institute

contributes to sustainable development, poverty alleviation and cultural preservation and exchange. KIT operates internationally through development projects, scientific research and training, and also provides consultancy and information services. The institute is a not-for-profit organization that works for both the public and the private sector in collaboration with partners in the Netherlands and abroad.

KIT Information & Library Services (KIT ILS) collaborate with local not-for-profit organizations in the development and strengthening of information services in developing countries. One of its aims is to make information accessible to professionals through collaborative projects, such as the one described in the present paper. The department has experience of working with partners in 40 countries in Asia, Africa, and Latin America.

According to a Memorandum of Understanding signed in 2007, KIT ILS and KNUST Library work together to strengthen the University Library System at KNUST along the lines laid out in the University Library Strategic Plan (KNUST, 2005). The fields of cooperation extend to all thematic areas identified in the plan: (1) collection development; (2) infrastructural development; (3) training, research, and innovations; (4) human resource development and application of ICT; (5) income generation; and, possibly, (6) co-production of information products and services. The KNUST IL project falls under heading (3) training, research, and innovations.

The range of ICT activities that are carried out under the MoU includes: (1) institutional repositories; (2) library systems; (3) ICT infrastructure/local networks; (4) content management; (5) distance learning; and (6) digitization of both heritage material and research information. The MoU is special in the sense that it proposes a flexible, on-demand partnership towards stronger library services. Maintaining an open, collaborative spirit of working in real partnership for a period four years is highly valued.

In addition to the MoU between KNUST and KIT, a partnership has been established with CARLIGH and the Association of African Universities (AAU) to garner broad-based administrative support for developing institutional repositories at the main universities in Ghana. A first conference was organized in April 2009, to be followed up by more technical workshops in future. KNUST is one of the universities participating in this programme and the library has already started working on the repository.

2.5 Main project activities (October 2007 - July 2009)

The following is an overview of the main project activities that served to prepare for the introduction of IL at KNUST by the start of the academic year in September 2009. The activities are all part of an effort to implement the University Library Strategic Plan, ULSP 2K14 (KNUST, 2005).

In October 2007, two officials of KNUST, including the university librarian, rendered a visit to Amsterdam to discuss the prospects for a partnership programme between KNUST and KIT ILS to benefit KNUST in the area of library and information management services. In November 2007, the partners co-signed the MoU and a preliminary project plan was drawn up by KNUST college and main library staff, using the logical framework approach, a project management tool widely used in the design, monitoring and evaluation of international development projects. Its application was facilitated by two KIT ILS advisers.

The main problem of the KNUST library systems was identified as the inability to provide effective information to the user. Priority was therefore to be given to training library staff with a view to building an IL programme. Other possible activities included: (1) the development of an institutional repository; (2) collaboration in KIT's portal development; (3) digitization of the library catalogue; (4) curriculum development of the computer science classes; and (5) enhanced access to online resources.

Only two months later - in January 2008 - KIT ILS facilitators delivered a three-day Training in Advanced internet Searching (TAIS) at the KNUST ICT Centre to a group of 35 librarians and post-graduate students. The general objective was to train participants in skills and

knowledge of tools to efficiently search and find relevant and topical information on the internet, as well as to convert this information into an appropriate and presentable format. Subjects included: search analysis and strategy, the selection of internet sources, the deep web, Boolean searching, the selection of material, advanced searching using Google and other search engines, keeping record of (re)search findings, and using and presenting search results in different ways. All participants received a CD-ROM containing all the training material used, and an explanatory booklet.

The first results of the TAIS training came in the form of a series of 2x2-hour training sessions on internet searching for KNUST faculty members. An indication of the success of these sessions can be seen in the fact that the facultative attendance during the second session far exceeded the first one. In September 2008, a workshop was held at the Royal Tropical Institute (KIT) in Amsterdam. It consisted of a mix of activities, including logical framework planning to draw up a plan for the university-wide introduction of IL courses for various categories of students at KNUST. The participants in this planning workshop also visited university libraries in the Netherlands to generate ideas for possible application in Ghana.

In October 2008, discussions were held at KNUST to respond to feedback to the results of the September 2008 workshop and to help make arrangements for the implementation of IL. This included setting up an IL programme implementation task force. During this phase the programme gained momentum, and two additional training workshops were planned for 2009. The first, in February 2009, was to be an IL development workshop especially geared toward the development of the electronic part of the curriculum: online databases and internet searching. The second, in May 2009, consisted of a three-day training in online database and internet searching aimed at faculty staff, with a view to getting their buy-in, and also to offer the opportunity for a smooth transition of ownership of the KIT ILS programme to the KNUST Library.

In February 2009, a five-day workshop to develop syllabuses for the curricula of five student categories at KNUST was held on-campus in Kumasi. There were twelve participants, six from the main library and an equal number from the college libraries. The topics of internet searching, database searching, catalogue searching, and IL in general were dealt with in four working groups. In addition, draft subject guides were prepared and collated with a view to helping library users identify the most suitable information sources for their needs.

In May 2009, a sensitization workshop was held at KNUST to introduce lecturers and researchers of all KNUST faculties to IL. Focusing on e-resources, participants were shown how the use of e-resources (internet, databases) could support their scientific work. The following topics were covered: (1) the past, present, and future of the internet; (2) basic database searching; (3) advanced database searching; (4) the concept of IL; (5) plagiarism, copyright, citation; and (6) internet searching.

At the end of each course or workshop, participants were required to fill out an evaluation form. Analysis showed that most participants were satisfied with the course content and the course duration of three days. Some participants, especially those with limited computer skills, indicated that they would have preferred a longer course and more opportunities to practice their newly acquired information skills. No formal assessment, such as tests or exams, was undertaken. Instead, informal assessment took place during the presentation and the exercises. It was clear, however, that some participants with moderate computer skills and insufficient internet experience lacked the basic entry requirements to fully benefit from the courses.

2.6 Synchronization of IL planning and support

Meanwhile, a proposal to have IL acknowledged as part of a graded course was approved by the Information Literacy Sub-Committee of the Planning & Resources Committee in 2009. Provided the Planning & Resources Committee approves of IL as part of graded courses on academic skills and research skills, which is very likely, the Academic Board is expected to

authorize implementation. The following table provides an overview of the various steps in the process.

Activity	University administration	Library management	KNUST-KIT partnership
1. New university mission statement on IL	x		
2. Preparation of the University Library Strategic Plan		x	
3. Approval Library Strategic Plan 2K14 (2005)	x		
4. Implementation 2K14		x	
5. KNUST-KIT Memorandum of Understanding (2007)			x
6. Development of Information Literacy Course			x
7. Research publication (2010)			x
8. Submission proposal Information Literacy Course		x	
9. Curriculum review	x		
10. Approval proposal Information Literacy Course	x		
11. Evaluation of the partnership			x

Table 1. Steps in the introduction of information literacy at KNUST and responsibilities of the parties involved

The steps of the process in table 1 above are: (1) approval by the university administration of a new mission statement on IL; (2) preparation of the University Library Strategic Plan by the library management; (3) approval of the Library Strategic Plan 2K14 by the university administration; (4) implementation of 2K14 by the library management; (5) establishment of the partnership between KNUST and KIT as formalized in the MoU, especially the paragraph on training and research; (6) development and delivery of the Training in Advanced Internet Searching, but also development of an IL syllabus, incorporating internet searching, for various student groups, and IL sensitization of faculty staff; (7) collaborative research of which the present paper is the first result; (8) submission of the proposed information literacy course; (9) curriculum review by the university administration; (10) stamp of approval of the development of the IL programme proposal by the Academic board; and (11) evaluation of the partnership, which is ongoing and closely aligns with the Strategic Plan 2K14.

In 2009, a proposal to have IL acknowledged as part of a graded course was approved by the Information Literacy Sub-Committee of the Planning & Resources Committee. Provided the Planning & Resources Committee approves of IL as part of graded courses on academic skills and research skills, which is very likely, the Academic Board is expected to authorize implementation.

3 Characteristics of an information literacy programme

3.1 ACRL framework of best practices

The aim of this chapter is to examine the practicality of the Association of College and Research Libraries (ACRL) guidelines for IL programming (Pausch & Popp, 2003) when used at a university in Sub-Saharan Africa. The main question is whether the guidelines would need to be amended or expanded to accommodate characteristics of best practices that should be adhered to in a non-USA context.

The characteristics of the IL programme at KNUST are described, using a framework based on both the IL wheel of Curzon and Lampert (2007), which has 18 segments, and on the guidelines for best practices provided by the ACRL (Pausch & Popp, 2003), which has ten categories. These categories are summarized in the adjacent text box.

3.2 Mission

Ideally, a mission statement for an IL programme includes a definition of IL which is consistent with that of the university, and which reflects the contributions of and expected benefits to all institutional constituencies. We all think we know what "information literacy" means, but Sarah McDaniel (in: Curzon & Lampert, 2007) challenges us to really understand the meaning of the term. How, for example, do we differentiate it from bibliographic instruction? IL can be a rather broad subject, especially when it is taught in combination with essay writing or other academic skills.

It is KNUST's mission to produce "high calibre graduates to support the industrial and socio-economic development in an environment for teaching, research and entrepreneurship training in science and technology for the development of Ghana". (KNUST, 2010) This mission statement appears to be fully consistent with the advancement of IL among KNUST's students, alumni, faculty members, and researchers.

The clearest formulation of the mission of the IL programme at KNUST can be found in the Proposal for Information Literacy Course, where it states that it is "the aim of KNUST to produce lifelong learners," and that "IL skills enable students to think critically and learn more effectively". In the same proposal, information literacy (IL) is defined as the capability to recognize when information is needed, the ability to locate the information, evaluate the information and use the information acquired effectively to solve the problem for which the information was needed. An information literate person is characterized by the ability to recognize the amount of information needed for a purpose, locate the needed information

Text Box 1: Requirements for an Information Literacy (IL) programme

1. A **mission** that is consistent with that of the university and reflects the roles of user groups;
2. Clear **goals and objectives**, developed with input from various user groups;
3. **Planning** with a budget, institutional support, and adequate staffing and staff development;
4. **Administrative support** to identify required resources and assign responsibility for IL;
5. **Articulation with the curriculum**, emphasis on student-centred learning, and institution-wide integration;
6. **Collaboration** between faculty staff and librarians to garner support for the programme and integrate IL concepts and disciplinary content;
7. **Pedagogy** that incorporates appropriate ICT and links to ongoing coursework;
8. **Staff** who are adequate in number and have appropriate expertise and experience;
9. **Outreach activities** to communicate the value of the IL programme through a variety of channels, addressing the needs of all user groups;
10. **Assessment and evaluation** activities to inform further improvement of the programme, using a variety of outcome measures such as portfolio assessment, oral defence, quizzes, essays, direct observation, anecdotal, peer and self review, and experience.

(Pausch & Popp, 2003)

efficiently, critically evaluate the sources of information and the actual information sourced, use the information in the right way without plagiarizing or infringing on copyright rules, and acknowledge the sources of information used in a prescribed style.

Although there is no explicit mission statement of the IL programme as yet, the concept of IL itself is defined very clearly. In practice, at least for the moment, the definition has been narrowed down to that of library instruction and user education, supplemented with searching e-resources both in databases and on the internet. Library instruction typically explains things such as catalogue use, the reference section, and book borrowing procedures. What may be lacking is a formal recognition of the role of scientific and faculty staff in lifelong learning strategies. However, faculty staff actually participate in the programme, and were in fact the prime targets of the sensitization workshop in May 2009.

An important question remains as to whether computer literacy should be included in IL training, not so much because computer skills are part of IL, but because such skills provide the necessary foundation for IL. A point of concern is that many students and faculty staff have little hands-on experience with computer use or the internet. This considerably hampers any IL training. It could in fact be such a hindrance as to prevent some people from actually learning anything useful at all.

According to some, including Eisenberg of the Big6 (see <http://www.big6.com>; also in: Curzon & Lampert, 2007), any particular skill within IL, such as the evaluation of sources, cannot be taught in isolation from other skills, such as the information seeking strategy or the analysis of the information. Notwithstanding the relatively narrow interpretation of IL used at KNUST, there is in fact enough room to pay attention to its wider aspects. Training material was completed with such elements as an explanation of how to develop a research question, the need to make an essay outline early on in the writing process, and the workings of the scientific information cycle. The full complement of training material now available, including a locally produced library instruction video, the Training in Advanced Internet Searching, and the Information Literacy Sensitization Training, certainly seems to justify the term "Information Literacy training".

3.3 Goals and objectives

According to the Proposal for Information Literacy Course (KNUST, 2008), the IL course is designed to

- assist students to achieve greater success by accessing, using, and applying information effectively through providing them with the knowledge of resources, methods, and services which will support their education; and to
- enable students to be information literate for their university education and also to develop lifelong skills for their future careers.

This clearly reflects the desired outcomes of preparing students for their academic pursuits and for effective lifelong learning as mentioned in the ACRL guidelines. The proposal fails to establish measurable outcomes for evaluation of the programme, even though assessment procedures are outlined.

According to Randall Hensley (in: Curzon and Lampert, 2007), every programme must begin with workable and sustainable goals that will carry the programme through the years ahead. By placing goals in the context of student learning, the curriculum, collaboration, motivation, and shared commitment with students, it is possible to anchor IL programmes in the institution. At first sight, this may not seem very appropriate for the Ghanaian situation and probably more applicable to the US, but it brings home the message that broad support and commitment from faculty, staff, and – yes, indeed – students are instrumental in making the programme a sustained success. Hensley also emphasizes that university learning should be student-centred, with self-directed learning that has lifelong implications.

Although the current scope of the IL programme is rather modest, in the sense of focusing on e-resources, the more ambitious long-term goal of lifelong learning remains intact. The

programme can be expected to evolve, as connectivity, facilities, and computer skills improve. It is interesting to see how relatively quickly an IL programme can be got off the ground in an environment that is still very much catching up with the digital era.

In fact, as far as university-wide long-term goal setting is concerned, the process was more geared to serving as an eye-opener for all concerned and developing the contents of a basic IL course, than to developing long-term goals. To what extent IL can or should be integrated into the KNUST curricula in a way that promotes lifelong learning on a more sustainable basis remains to be seen. The main aspects to be looked into are: (1) the development of user profiles by needs assessments to develop a student perspective rather than a librarian perspective; and (2) the larger institutional environment, namely the way goals are set generally and whether this is consistent and long-term.

Another decision that will need to be taken in future is whether the eventual course will be more student or teacher-centred. In the first instance the course can remain teacher-centred to a considerable extent, but it may incorporate student-centred aspects by taking into account student's needs, abilities, interests, and learning styles, with the teacher role shifting to that of a facilitator of learning.

3.4 Planning

According to Peacock (Curzon & Lampert, 2007), a leading advocate of the integrated literacy school, one of the greatest challenges is to sustain an IL programme over many years. A common dilemma for librarians is to launch a successful and well-regarded IL programme, only to find it floundering within just a few short years. In the case of KNUST, sustainability was a direct concern only in the sense that resources had to be made available as part of the planning and approval procedure. Whether or not the programme will encounter difficulties after a few years remains to be seen.

To some extent the vision of a library as an active participant in the educational business of the university is already shared at KNUST: librarians are expected to become academic lecturers in their own right; to do research and publish it. The challenge will be for the library to participate in embedding IL by planning better syllabuses together with faculty staff.. This should be a gradual process, and it does not seem necessary to plan beyond that for some time to come.

Peacock makes an interesting distinction between extracurricular (supplementary), intercurricular (integrated), and intracurricular (embedded) IL learning and teaching. Extracurricular IL learning activities develop generic enabling skills with attendance remaining at the discretion of each individual student. At KNUST, as elsewhere, such an approach could help ease some of the basic problems in differential IL and computer skills levels among students, while at the same time reducing the strain on the limited ICT training infrastructure.

Long-term commitment to IL education embedded in the organization will require a considerable and continuous advocacy effort in the future. At KNUST, the prospects are good for IL to be incorporated in the curriculum of students, and it seems that there are going to be graded courses for at least some student groups. With the right level of commitment at all levels, the organizational (coordination between different people, departments, procedures) and logistical (space, connectivity, time) problems can all be solved.

Human resource development (HRD) of library staff has been one of the focal points of the KNUST-KIT programme and probably should remain so for the near future. One HRD problem is that some staff have very little time to develop or hone their internet or database searching skills. This is one of the remaining problems to be addressed.

3.5 Administrative and institutional support

The lack of institutional commitment to information skills combined with the absence of time slots in the curriculum (Godwin, 2006, in Amalahy et al., 2009) are two of the main barriers to the introduction of IL training that must be overcome at various levels. Libraries in Sub-Saharan Africa often have a Cinderella status with low budgets for acquisition, insufficient funding for ICT development and internet access, and inadequate training space. In the case of KNUST, there is no problem as far as support from the library administration is concerned. In fact, the library administration in the person of the university librarian herself is fully committed to the introduction of IL at KNUST.

The KNUST-KIT programme has been designed to help remove a number of barriers to the introduction of IL. The question remaining is whether the programme has been sufficiently effective in this supportive role. The need for embedding IL in the curriculum of different faculties has been clearly recognized early on. The plan is to involve willing faculty members from some interested colleges to take the first steps. A simple way of embedding IL is by requiring students to include web references in the bibliographies of submitted papers. Another option is to increase the level of IL among faculty staff. Further advocacy, preferably in the form of training courses, will be needed to get more colleges and faculties on board.

Generally, library staff feel undervalued and underused. There is a need for more recognition of their expertise, but at the same time this will require continued professional development. At KNUST Library, incentives will need to be provided in order to facilitate this type of development.

3.6 Articulation with the curriculum

Ideally, articulation of the IL programme with the curriculum should be formalized and widely disseminated. It should emphasize student-centred learning and use local governance structures to ensure institution-wide integration into academic programmes. At a more practical level, articulation with the curriculum should identify the scope (depth and complexity) of competencies to be acquired on a disciplinary level as well as at the course level, and subsequent competencies throughout a student's academic career, progressing in sophistication. It should also specify programmes and courses charged with implementation.

In the case of KNUST, syllabuses as well as a proposal for an IL course have been developed. They are used in the curriculum review that is expected to result in the establishment of an IL module. The syllabus for Information Literacy Skills for freshmen in the first semester, ILS 101 (see annex 1), emphasizes catalogue searching and borrowing physical library sources, whereas for third-year and post-graduate students the focus is on database searching and proper citation. The courses that could be expanded to include IL skills are, for instance, those designed to impart academic skills and research skills.

Further integration with the curriculum, especially department- or college-based IL training, is still to take shape in collaboration with the faculty concerned. The governance for this type of development (collaboration of the library with faculty staff) is not yet in place, and must remain or become the object of continued advocacy.

3.7 Collaboration

In its guidelines for IL programming, the ACRL mainly refers to collaboration among disciplinary faculty staff, librarians, and other programme staff. An effective programme can only evolve if it is supported by the entire academic community. Collaboration should result in a fusion of IL concepts and disciplinary content. Collaboration best occurs at all stages of the process, from planning and delivery and assessment of what students have learnt, to evaluation of and refining the programme.

At KNUST, all college librarians participated in the syllabus development workshop of February 2009, thus ensuring involvement of the colleges as well as the central library. One of the focal points of this workshop was lifelong learning. Other forms of collaboration are those with the advisors of KIT ILS and with the ICT department. This type of collaboration may have to be enhanced to ensure that faculty and students are sufficiently computer literate to be able to fully benefit from IL training. Lifelong learning is one of the aspects of IL that can be used to entice faculty and ICT staff into collaborating with library staff to create embedded IL programmes.

The coordination of central library and college library activities has been ensured by establishing a committee to guide the design and implementation of the KNUST IL course. The committee reports to the University Librarian, while the college librarians keep in touch with their respective faculties. To engender interest in embedding IL, librarians from central as well as college libraries initiated two-hour crash courses for faculty staff with the aim of making them aware of the usefulness, both for students and faculty, of searching the internet for relevant scientific material.. At first, not too many faculty members showed up for these crash courses, but those who did were so enthusiastic that the following courses were crowded. In this way, the news about the libraries organizing IL related courses spreads and establishes the required favourable reception among the academic community.

The evaluation of the sensitization workshop in May 2009 confirmed the remarks of one participant who stressed his appreciation of being made acquainted with searching e-resources, or in other words, becoming information literate. Workshop participants agreed to make their colleagues aware that such courses were being organized within KNUST on the initiative of KNUST Library, thus increasing support for the IL programme among the academic community. Together with the support of the pro-Vice Chancellor, who is also in favour of such a programme, this development ensures the growing prospects for embedding IL as a graded course within KNUST.

3.8 Pedagogy

A classical, more teacher-centred pedagogy prevails at KNUST. With large student numbers and sometimes over-populated lecture rooms and limited teaching aids, this is probably the most suitable approach. The question is whether it should be applied at all times and in all circumstances.

An instance of the classical, teacher-centred approach could be observed during the syllabus development workshop, when the facilitators assumed that it would be very useful to design the course using a combination of a slideshow in PowerPoint™ and hands-on assignments. The slideshow could then also be distributed as a handout. After a few days it appeared that most lecturers considered a detailed syllabus adequate for curriculum development. It was felt that there was generally little need to prepare material for the students in the form of handouts, as this is contrary to the current lecturing methods in Ghana.

Following ACRL's characteristics of best practices, an IL programme is capable of supporting diverse teaching approaches, incorporates appropriate information technology and other media resources, includes active and collaborative activities, encompasses critical thinking and reflection, responds to multiple learning styles, supports student-centred learning, builds on students' existing knowledge, and links IL to ongoing coursework and real-life experiences appropriate to programme and course levels (ACRL, 2003).

By its very nature, IL encourages a more student-centred approach: students cannot be said to be information literate if they are not able to formulate their own information needs and access this information. For such IL training to be effective, it needs to be hands-on. But for such hands-on IL training to be feasible, sufficient PCs and bandwidth must be available. Within the KNUST context, this may not be the case for some years to come. This also poses a serious problem for ICT training. In practice, this means that hands-on training will be rather limited in scope and time.

In the near future, provided sufficient students have personal access to the internet and are sufficiently computer literate, it may be possible to encourage them to do practical exercises at home or to develop other, more student-centred approaches or complementary methods. One approach is where IL training material is available on the KNUST Library website¹. Another idea is to put an IL tutorial on the web, such as Inflite², which is available as an open source and could easily be adapted to suit the situation at KNUST.

This approach can be carried to its extreme when the interfaces of the various e-resources are designed to be so user-friendly that IL training can be made fully optional. This is obviously the way to go, but it relies on students being highly computer and information literate already, and interfaces being extremely user-friendly. At the moment, many freshmen at KNUST may not have benefited from the experience of using computers to source information on the web, or have even touched a computer. Nevertheless, it remains important to pursue the approach of increased user-friendliness, because it will save training time in future.

3.9 Staffing

Staffing is mainly about human resources development of all staff involved in IL training, including disciplinary faculty members, but also about the availability of programme coordinators, graphic designers, teaching or learning specialists, and others as needed. In addition to their practical duties, staff serve as role models, exemplifying and advocating IL and lifelong learning. They should receive and actively engage in systematic and continual professional development and training. They should also receive regular evaluations about the quality of their contribution to the programme.

It is important to realize from the start that so many people are involved in an IL programme. There must be at least one person responsible for not losing the overview, and who should keep track of the human and material resources involved in the realization of an IL programme. We would like to emphasize the fact that especially the staff in the ICT department should not be overlooked.

Faculty readiness is spoke number twelve in the wheel of IL as developed by Curzon and Lampert (2007). The contributing authors show how they developed close collaboration within the faculty to increase student IL skills for the nearly 400 students enrolled annually in graduate programme at a US university. Their experiences are particularly important as they give librarians insight into the faculty perspective on IL and into the inner workings of a department. It provides a model approach that could be used in academic departments at KNUST, and shows that in fact, IL planning may have to be replicated in all its aspects, from defining information competence to identifying the varying needs of different categories of students. The authors conclude that supervisors and employers attach great value to the newly acquired information skills of students and alumni, but an important part of the work still remains to be done, namely the institutionalization of the IL process so that it is fully embedded in the everyday running of the department.

From the evaluation at the end of the workshop at KNUST in May 2007 for faculty staff, we learned that faculty staff were very enthusiastic about the idea of having IL embedded in the general curricula at KNUST.

3.10 Outreach

According to the ACRL standards (Pausch & Popp, 2003), it is good practice for an IL programme to: (1) communicate a clear message defining and describing the programme and its value to targeted audiences; (2) provide targeted marketing and publicity to stakeholders, support groups and media channels; (3) target a wide variety of groups; (4)

¹ An example is the full list of databases that KNUST is subscribed to, which can be found at <http://library.knust.edu.gh>.

² Inflite is an online IL initiation comprised of six tutorials. See <http://inflite.ulib.iupui.edu>.

use a variety of outreach channels and media, both formal and informal; (5) include participation in campus professional development training by offering or co-sponsoring workshops and programs that relate to IL for faculty and staff; and (6) advance IL by sharing information, methods and plans with peers from other institutions. Outreach is the responsibility of all members of the institution, not only the librarians.

At this stage, outreach at KNUST would mainly seem to take the form of advocacy. It is, however, good to realize that at a later stage additional outreach activities will have to be undertaken. It should be clear from the start who the target audiences are. Clear communication about tasks and responsibilities between and among stakeholders, for instance, is a prerequisite for any IL programme to succeed.

As to information sharing, we would point to CARLIGH, the Consortium of Academic and Research Libraries in Ghana. Its mission is to employ collective information resources, available technology, and staff capabilities to improve teaching, learning and research, including life long learning, in member institutions in Ghana. In early 2009, the consortium gathered to discuss IL.

3.11 Assessment/evaluation

Currently, KNUST Library is inclined to grade courses with examinations at the end of the semester. In contrast, ACRL's recommendations on assessment are clearly more student-centred in that they: (1) acknowledge differences in learning and teaching styles by using a variety of appropriate outcome measures, such as portfolio assessment, oral defence, quizzes, essays, direct observation, anecdotal, peer and self review, and experience; (2) focus on student performance, knowledge acquisition, and attitude appraisal, (3) assess both process and product'; and (4) include student, peer, and self-evaluation.

During the syllabus development workshop of February 2009, one of the assignments was for participants to search for freely available online examination material, as this might provide leads or examples for assessment at KNUST. However, at that time the focus was more on outlining the content of the course than preparing examination material. In due course, this approach could be useful when the teaching staff responsible for the eventual courses in the graded curricula prepare exams according to KNUST standards. Depending on the teaching methods prevailing at KNUST, those responsible for teaching IL skills could consider incorporating student-centred assessment elements in their exams. As said earlier, IL is almost by definition intrinsically student-centred. In this sense, the introduction of IL at KNUST could offer an opportunity to strengthen or introduce aspects of student-centred teaching and assessment on an experimental basis. As in most educational institutes, especially with regard to assessment, it is to be expected that teachers may resist the idea of students participating in the evaluation of their own learning.

Apart from student assessment/evaluation, there is also programme evaluation which, according to ACRL (Pausch & Popp, 2003), (1) establishes the process of ongoing planning and improvement of the program, (2) measures directly progress toward meeting the goals and objectives of the program, (3) integrates with course and curriculum assessment as well as with institutional evaluations and regional or professional accreditation initiatives, and (4) assumes multiple methods and purposes for assessment and evaluation.

The committee responsible for implementation of the IL course could also be in charge of programme evaluation and review. In that case, they should not overlook the need to involve other groups in the process, including lecturers, ICT staff, administration, heads of department, and students.

3.12 Conclusions

The ACRL guidelines summarized in text box 1 (page 16) seem straightforward, logical and fairly easily to incorporate and apply. Check and tick, one would say. However, local practice does not always reflect the ultimate situation. Although we can see from the comparison above that KNUST's IL programme development complies with the ACRL guidelines to a large extent, some additions to these guidelines are suggested. These are mainly of a technical/infrastructural kind.

Now that the glass fibre network is reaching the backbone of Africa, connectivity and bandwidth are increasingly improving, also in Kumasi. KNUST is catching up with this, and is making serious efforts to optimize their digital library infrastructure. Realizing that a digital library infrastructure is vital for an IL programme to suit the information age, we propose adding a new category to the ACRL list that covers this need.

11. Digital library infrastructure: *the effectiveness of IL training will be much higher with the full array of digital library options in place, including an Online Public Access Catalogue (OPAC), subject directories, user-friendly database access, adequate training capacity, and library automation.*

From the experience gained in Kumasi, we have also realized that for students to fully benefit from IL training, basic information skills are required. These relate not only to basic computer skills, but also the understanding that for carrying out research or working out an assignment (paper, essay or thesis), one needs to know where to find reliable information for correct use. Indeed, this resembles the definition of an information literate person. Computer skills can, for instance, be combined with basic information skills as early as possible in a course, a freshmen's first semester, first year course, for example. The syllabus outline (annex 1) developed at KNUST Library takes this into account. We now suggest adding a requirement for basic information and computer skills as a separate category to the existing ten ACRL standards.

12. Information skills: *all entrants should be grounded in the same basic skills in order to be able to fully benefit from any IL training. In addition, adequate opportunities to exercise and enhance skills should be guaranteed for all students, faculty, and library staff.*

Next, we would like to comment on two existing categories within the ten ACRL guidelines: category four, administrative support, and seven, pedagogy. Regarding category four, we would like to add that the scope of the IL training should be clarified as early as possible and sufficient funds allocated to improving the ICT infrastructure of the library. For category seven, we want to stress that adequate ICT skills training should be ensured for students and faculty members.

Furthermore, it is indeed preferable to integrate IL training with normal coursework. This probably requires a different approach to lecturing, whereby faculties incorporate assignments that call upon students' information literacy skills. Of course, lecturers must have a certain degree of information literacy themselves. However, so long as adequate capacity (PCs, bandwidth) for training large groups of students is not available, it may be better to rely on classical teaching methods.

For ease of reference, the main points for attention from the above observations have been summarized in Annex 4.

4 IL Training in practice – compliance with IL competency standards

4.1 Information Literacy Competency Standards for Higher Education

The Information Literacy Competency Standards for Higher Education (ACRL, 2007) provide a framework for assessing the information literate individual. The standards outline the process by which faculty staff, librarians and others can pinpoint specific indicators that identify a student as information literate.³ Translating these generic ACRL standards into detailed training objectives and associated instruction material is not always as straightforward as it might seem. It is one thing to adopt these standards for information literacy training, but quite another to ensure that IL courses are in full compliance with them. The standards are often referred to, but the problem of verifying whether training complies is often overlooked. The aim of this chapter is to carry out such verification, using the trainings provided within the framework of the KNUST-KIT partnership.

4.2 Objectives for Information Literacy Instruction

A tool to better understand and apply the Information Literacy Competency Standards for Higher Education is provided by the Objectives for Information Literacy Instruction (ACRL, 2001).⁴ In fact, the Objectives are the companion statement to the Competency Standards and are intended to give grounding in how to approach and understand the "outcomes" defined in the Standards. Such help is particularly useful for institutions where IL is an entirely new subject that has not been subjected to earlier curriculum reviews. One of the reasons for the difficulty of applying the standards is that they have been formulated in a generic and therefore abstract style. An example is that they speak of "information resource interfaces" to avoid referring to something as specific as an internet search engine.

Without any prior knowledge of existing IL programmes, when only the competency

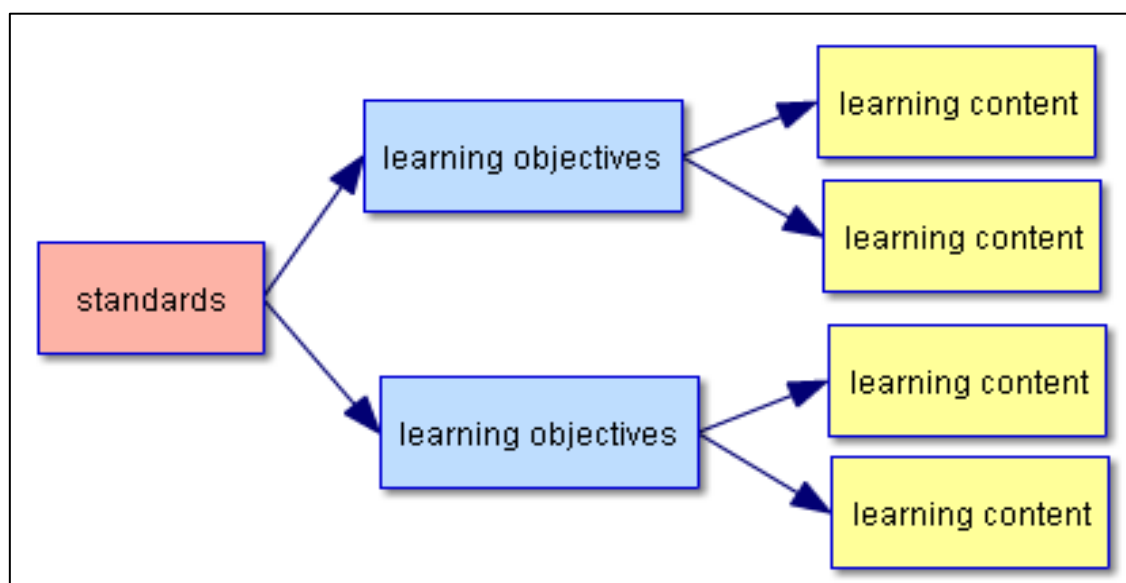


Figure 1. The relationship between the information literacy standards (ACRL, 2007), the learning objectives (ACRL, 2001) and the learning content in the syllabus (Annex 1) and the training slideshow (Annex 2).

³ The standards can be downloaded from <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>.

⁴ In fact, a full range of resources is now available at <http://www.ala.org/ala/mgrps/divs/acrl/issues/infolit/index.cfm>.

standards are available for reference, translating learning objectives into learning content would be a daunting task. To simplify matters, we have distilled a checklist of objectives using a variety of sources, including the SAILS test items⁵ as listed in Project SAILS Skill Sets for the 2009-2010 Academic Year (Radcliff, Salem, O'Connor, & Gedeon, 2007).

The checklist is presented in Table 2 below. Column one represents the ACLR objectives. Columns two, three, and four represent the corresponding numbers of ACLR standards, the slide numbers of a slideshow used during an IL sensitization workshop for faculty staff held at KNUST in May 2009 (see annex 3), and the paragraph numbers of a syllabus that was outlined after the workshop on Curriculum Development for Information Literacy Courses at KNUST, held in Kumasi in February 2009 (see annex 1).

4.3 Compliance with ACRL standards

The table below shows that out of the 53 detailed learning objectives used, only 13 were not covered, which corresponds to slightly less than 25%. Of these 13, more than half are judged irrelevant at the present stage of IL development at KNUST. Others are not irrelevant, but simply self-evident. This leaves only very few objectives that could be considered for inclusion in the IL curriculum at the moment.

On the main learning objectives, there is reasonable agreement between the syllabus and the PowerPoint.

Table 2. Compliance of the KNUST-KIT training products with the ACLR standards

ACLR objectives for information literacy instruction ⁶	ACLR Standard number	Slide number	Syllabus paragraph number
The information literate student:			
Standard 1: Articulates need for information			
1.1. Articulates need for information			
• Develops a thesis statement and formulates questions based on the information need	1.1.2	69	3.5
• Explores general information sources etc. to increase familiarity	1.1.3	69	(1.8), 3.5
• Narrows a broad topic or vice versa by modifying the scope of questions	1.1.4	37, 69	
• Identifies key concepts and terms that describe the information need	1.1.5.	38	
1.2. Identifies types and formats of potential sources			
• Names the three major disciplines of knowledge and subject fields in them	1.2.2	--	--
• Finds sources for relevant terminology	1.2.2.3	31, 93	
• Understands how the publication cycle affects access to information	1.2.2.4	70, 71	
• Understands the value of different formats in which information is available	1.2.3	71	
• Distinguishes characteristics of information provided for different audiences	1.2.4.1	--	
• Understands that the importance of primary and secondary sources differ depending on discipline	1.2.5	--	
1.3. Considers cost of acquiring information			
• Determines whether material is available immediately	1.3.1.1	--	1.4
• Considers alternative means of obtaining material	1.3.3.2	82	(1.3)
1.4. Re-evaluates the need for information			
• Understands when a research topic may need to be revised	1.4.1.1/2	22, 24	
Standard 2: Acquires needed information effectively and			

⁵ Project SAILS (<http://www.projectsails.org/>) began in 2001 with the goal of developing a standardized test of information literacy skills that would allow libraries to document skill levels for groups of students and to pinpoint areas for improvement.

⁶ This is not the full list, but a checklist of the main objectives.

ACLR objectives for information literacy instruction ⁶	ACLR Standard s number	Slide number	Syllabus paragraph number
The information literate student:			
efficiently			
2.1. Selects information retrieval systems			
• Knows difference between free Internet search tools and fee-based databases	2.1.3.6	17, 82	
• Selects appropriate tools (eg indexes, online databases) for research topic	2.1.3.5	35, 59-61, 93-96	1.5, 1.7
2.2. Constructs a search strategy			
• Identifies keywords that describe an information source (article, book ...)	2.2.2.4	31, 37	(3.5)
• Explains what controlled vocabulary is	2.2.3.2	23, 24, 81	(1.5)
• Successfully searches for information using controlled vocabulary	2.2.3.4	28, 31	(3.1)
• Demonstrates when it is appropriate to search fields such as author, title	2.2.4.1.	21, 88, 91, 92	(1.5)
• Understands Boolean logic and constructs search statement	2.2.4.2	40, 41, 43, 50-54	3.2
• Understands nesting, proximity searching, truncation, keyword searching	2.2.4.4/6 /7	29	(1.5)
• Is aware of different database interfaces and uses help screens to find way	2.2.5.1/2	21, 30	
• Narrows and broadens questions and search terms for appropriate quantity, using Boolean logic, limiting and field searching	2.2.5.3	39, 44-49	
• Uses the organizational structure of a book (indexes, contents, ...) to locate pertinent information in it	2.2.6.4	55, 57-58, 84	
2.3. Uses various retrieval methods			
• Is aware of materials not available online or in digitized format (e.g. microform)	2.3.1.1.	9, 18	
• Recognizes the form of an information source (eg chapter in book) from citation	2.3.1.3.	79	
• Describes search functionality common to most databases (Boolean, field structure, keyword searching, relevancy ranking)	2.3.1.5	21, 30, 29	
• Uses call number systems	2.3.2.1	--	1.4
• Explains difference between library catalogue and a periodical index	2.3.2.2.	--	1.4
• Retrieves a document in print or electronic form		32, 34	
• Uses the web site of an institution or library to locate information about services	2.3.3.5	88, 96	
2.4. Refines search if necessary			
• Determines if quantity of citations is adequate	2.4.1.1.	24-27	
• Assesses relevance by examining title, abstract, subject heading, source, date	2.4.1.3	74	
2.5. Records and manages information			
• Selects most appropriate extracting technology (copy/paste, photocopy, other)	2.5.1	--	
• Uses various technologies to manage the information selected	2.5.5.	79	
Standard 3: Evaluates and selects sources			
3.2. Evaluates reliability, validity, accuracy, authority, timeliness, point of view/bias			
• Locates and examines critical reviews of information sources	3.2.1.1.	74	3.3
• Investigates an author's qualifications and reputation	3.2.1.2.	--	
• Understands that some information sources are one-sided or designed to be so	3.2.3.2/3	--	

ACLR objectives for information literacy instruction ⁶	ACLR Standard s number	Slide number	Syllabus paragraph number
The information literate student:			
• Searches for corroboration of accuracy and completeness	3.2.3.5	--	
3.5 Includes possible impact on value system		--	
3.6 Validates understanding through discourse		--	
3.7 Revises search strategy if necessary		44-49, 53, 54	
Standard 4: Pays attention to intellectual property, fair use, production, communication, and reflection			
• Manipulates digital text, images, and data into a new context	4.1.	--	
• Maintains a journal related to information seeking and communication	4.2	39, 42	
• Uses a range of information technology applications in creating the product	4.3.	72, 73, 79	
Standard 5: Considers economic, legal, and social issues			
5.1. Considers economic, legal, and social issues			
• Understands not all info is free (dbases)	5.1.2.1/2	78	3.1
• understands difference between general web search and library-provided tools	5.1.2.4	82	
• Identifies issues related to censorship and freedom of speech	5.1.3	--	
• Understands intellectual property, copyright, and fair use of copyrighted material	5.1.4.	76, 77	3.6
5.2. Follows laws, policies, and etiquette			
• Uses netiquette	5.2.1.	--	
• Legally obtains, stores, and disseminates text, data, images, or sounds	5.2.5.	76-78	
• Understands plagiarism and does not represent work attributable to others as his own	5.2.6	77	3.7
5.3. Acknowledges the use of information sources			
• Selects and uses an appropriate documentation (citation) style.	5.3.1	79	3.8

5 Concluding remarks and recommendations

5.1 Lessons learned

Introducing IL in academic curricula at universities in sub-Saharan Africa can be a daunting task. Many of the conditions for doing so are not yet in place or only marginally so. The experience at KNUST shows that it can be done in a relatively short period of time, but as always, the proof of the pudding is in the eating. Sweeping aside any lingering doubts about the programme will be part of the implementation process. Yet even when only part of the objectives can be achieved, the programme can be considered a success as long as there is a substantial improvement compared to earlier library instruction sessions. The foundations for future developments need to be laid, and as far as KNUST is concerned, even with the current levels of connectivity and computer literacy, the present time appears to be opportune. The same would seem to apply to many universities elsewhere in sub-Saharan Africa. Most important of all, it appears that IL development can drive forward related programmes, such as the digitization of the library infrastructure and advancing computer skills training throughout the university. Clearly, none of these programmes stand alone: the common factor is the need to improve learning and research by making better use of all information resources available.

Capacity building is key to the success of IL development: (1) capacity building of library staff in the sense of professional development, (2) in the sense of training development, (3) in the sense of being able to develop their training capacity, conceptually and pedagogically, and (4) capacity building of administrative structures to support library staff in this development.

It is recommended to:

- provide computer literacy training before IL training; consider implementing a standard such as the International Computer Driving Licence⁷; where this is too ambitious at first, to judiciously lower the standard, without losing sight of the long-term goal;
- pay special attention to computer literacy training of library and faculty staff and provide opportunities to maintain acquired skills;
- pay attention to the pedagogic skills of library staff, especially teacher-librarians;
- also pay special attention to the information skills of library staff; they are information specialists and should be able to fulfil that role to perfection;
- make efforts to fully digitize the library environment while bringing computer literacy to a prescribed minimum level; consider timing as an important issue for this; there is no need for both of these to be fully completed before starting IL training, but timing requires careful consideration;
- take into account the need for additional support for the digitization of the library environment, since this requires a major effort; this support could be in the form of manpower (or funds to hire manpower) and advice, for example on how to improve planning or make sure that user interfaces follow minimum standards;
- examine whether IL could contribute to other forms of pedagogy, more student-centred, especially with a view to producing lifelong learners; care should be taken to avoid the development of unworkable situations;
- address not only training, but also assessment, even if in the first year assessment is based on the classical pedagogy used at KNUST, to be expanded later;
- embed IL as the logical next step by making IL and other academic skills training part of introductory courses for a particular major subject, especially with interested faculty able to do so, for instance in medicine, law, and business disciplines;
- continue improvement of IL training, further needs, expected trends;
- investigate how different departments could assist in bringing the IL programme to fruition, for example by assisting in IL research or assisting in improving the pedagogy.

⁷ For more information on Computer Driving Licences one is referred to: <http://www.icdl.org.za/about.php?id=9> or <http://www.ecdl.com/programmes/index.jsp?p=102&n=108> or <http://www.icdlus.com/>

5.2 Final considerations

IL training is multi-faceted and has linkages to other parts of the curriculum. Some of the issues that have not been dealt with in the KNUST-KIT partnership are listed in the previous section (5.1). Other aspects are enumerated in the Annex 3 Checklist of possible complementary measures, and Annex 4 Checklist of points of attention in IL planning, respectively. To mention only a few: (1) how best to include subject guides and database information on the library website, (2) how to determine the demand for advanced database searching for faculty and postgraduates, (3) how to assess IL, both as a stand-alone subject and in discipline-specific assignments, (4) how to optimize the interaction design of the library information interface, and (5) how best to deal with differences in computer literacy levels among students and staff.

5.3 Conclusion

This paper can be considered as a reflection on an experience in action-learning. The experience is shared with others by casting it in the form of a working paper. The learning aspect of the experience has been structured and enriched by using the ACRL frameworks, both for assessing the IL training contents and the IL programming process. The question is whether there is scope for replicating the experience elsewhere or how it could inform future IL planning and training efforts elsewhere.

An obvious approach would be to ease planning and implementation processes elsewhere by taking a careful look at the implementation of our programme, eliminating superfluous elements, streamlining the remaining parts, and supplementing where necessary. Where conditions are similar to those at KNUST, this approach would most certainly save a lot of time. However, where IL training and programming has to begin from scratch, this may interfere with the process of understanding and taking into account the realities of the local situation. In those cases, a more comprehensive and strategic planning and advocacy exercise will have to be carried out first.

The paper may also be used simply as a way to become acquainted with the ACRL frameworks and to see how these were used to check compliance with the development of an IL programme in Ghana.

Finally, those who are well versed in the field of IL may find it worth their while to contrast the KNUST-KIT IL programme with similar programmes at their own institution. We would very much welcome this, and you are kindly invited to share with us any interesting or critical observations that may result from such a comparison.

By providing a detailed and systematized account of what transpired during the information literacy planning and training process at KNUST, this working paper has become an exercise in combining the abstract with the specific. To summarize once more therefore, we hope that this juxtaposition of the theoretical standards and requirements for information literacy planning and objectives with their practical interpretation will provide an easy-to-follow model for others to improve upon.

6 References

- ACRL. (2001). Objectives for information literacy instruction: a model statement for academic librarians. Retrieved from <http://www.ala.org/ala/mgrps/divs/acrl/standards/objectivesinformation.cfm>
- ACRL. (2007). Information Literacy Competency Standards for Higher Education. Retrieved from http://web.archive.org/web/20080212215420rn_2/www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm
- Agyen-Gyasi, K. (2008). The Need for Subject Librarians in Ghanaian Academic Libraries. *Electronic Journal of Academic and Special Librarianship*, 9(3). Retrieved from: http://southernlibrarianship.icaap.org/content/v09n03/agyen-gyasa_k01.html.
- Agyen-Gyasi, K., Lamptey, B. R., & Frempong, A. (2010). Academic Librarians' Role in Maximizing Library Use in Ghana. Retrieved from: <http://dspace.knust.edu.gh/dspace/bitstream/123456789/1932/2/ACADEMIC%20LIBRARIANS%20ROLE%20IN%20MAXIMIZING%20LIBRARY%20USE%20Final%20Draft%203.pdf>
- American Library Association. (1989). *Presidential Committee on Information Literacy: final report*. Retrieved from <http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm>
- Asamoah-Hassan, H., Ballantyne, P., Gwynn, S., Manda, P., & Winder, D. (2005). *Report from a Mid-Term Review of the Programme for the Enhancement of Research Information (PERI)* (p. 38). INASP. Retrieved from <http://www.inasp.info/uploaded/documents/PERI-review-formatted.pdf>
- Asamoah-Hassan, H., & Frempong, A. T. (2008). Access to E-Journals and E-Publishing Initiatives in Ghana: Successes, challenges and lessons learnt. Conference on Electronic Publishing and Dissemination "Putting African Journals On Line: Opportunities, Implications and Limits", Dakar, Senegal. Retrieved from http://www.codesria.org/IMG/pdf/17_Helena_Asamoah-Hassan.pdf
- Boadi. (2010, Mei 12). Philip Sowah explains Ghana's mobile internet revolution. *Daily Guide*. Accra. Retrieved from http://dailyguideghana.com/newd/index.php?option=com_content&task=view&id=9016&Itemid=253
- Curzon, S. C., & Lampert, L. D. (2007). *Proven strategies for building an information literacy program*. Neal-Schuman Publishers. Retrieved from <http://www.worldcat.org/isbn/9781555706081>
- Darkwa, O. K. (2007, April 23). ICT and the new educational reform in Ghana. *Ghanaian Times*.
- Garner, S. D. (2006). *High-Level Colloquium on Information Literacy and Lifelong Learning*. Alexandria, Egypt: Bibliotheca Alexandrina. Retrieved from <http://archive.ifla.org/III/wsis/High-Level-Colloquium.pdf>
- GNA. (2009). Ghana won't license new telecom operators. *Ghana Business News*. Retrieved from <http://ghanabusinessnews.com/2009/08/27/ghana-won%E2%80%99t-license-new-telecom-operators/>
- Harle, J. (2009). *Digital resources for research: a review of access and use in African universities*. Association of Commonwealth Universities. Retrieved from <http://www.scidev.net/uploads/File/Digital-resources-for-research-in-African-universities-issues-paper-for-Arcadia.pdf>
- KNUST. (2005). University Library Strategic Plan, ULSP 2K14. Kwame Nkrumah University of Science and Technology.
- KNUST. (2008). Proposal for Information Literacy Course. Unpublished manuscript
- KNUST. (2010). KNUST Library. Retrieved from <http://www.knust.edu.gh/pages/sections.php?mid=14&sid=94&id=81>
- Nalumaga, R. E. (2005). African Higher Education Research Online - From library skills to information literacy: considerations for Makerere University Library and Faculty. In *F.F.Tusubira and Nora K.Mulira (eds) Universities: taking a leading role in ICT enabled*

- human development* (pp. pp. 26-34). Phanton Solutions. Retrieved from http://ahero.uwc.ac.za/index.php?module=cshe&action=viewtitle&id=cshe_423
- Pausch, L. M., & Popp, M. P. (2003, Juni). Characteristics of Programs of Information Literacy that Illustrate Best Practices. Retrieved from <http://www.ala.org/ala/mgrps/divs/acrl/standards/characteristics.cfm>
- Radcliff, C. J., Salem, J. A. J., O'Connor, L. G., & Gedeon, J. A. (2007). Project SAILS Skill Sets for the 2009-2010 Academic Year. Retrieved from <https://www.projectsails.org/abouttest/skillsets.php?page=aboutTest>
- Republic of Ghana. Ministry of Communications. (2003). *The Ghana ICT for accelerated development (ICT4AD) policy: a policy statement for the realization of the vision to transform Ghana into an information-rich knowledge-based society and economy through the development, deployment and exploitation of ICTs within the economy and society*. Accra: Graphic Communications Group Limited. Retrieved from http://img.modernghana.com/images/content/report_content/ICTAD.pdf
- UNESCO, NFIL, & IFLA. (2005). *Beacons of the Information Society, The Alexandria Proclamation on Information Literacy and Lifelong Learning*. Retrieved from http://www.infolit.org/International_Colloquium/alexproceng.doc

Annex 1: Syllabus – Information Literacy Skills (ILS)

This syllabus was written out by Mr. Agyen-Gyasi at the end of the workshop on Curriculum Development for Information Literacy Courses at KNUST, which was held in Kumasi in February 2009. For the purpose of this report, the original syllabus description for 5 semesters (1st year semesters 1 and 2, 3rd year semester 2, and 1st year postgraduate semesters 1 and 2) as produced in February 2009 has been condensed and conflated to form 2 modules for 2 semesters: 1st year semester 1 (ILS 101) and 3rd year semester 2 (ILS 302).

ILS 101 - 1ST YEAR SEMESTER I

The course is aimed at:

- Appreciating the concept of IL;
- Using the library catalogue to search for materials by author, title, keyword or subject;
- Introducing the students to the concept of the Internet;
- Distinguishing a database from other types of information collections;
- Guiding students to identify tools for retrieval;
- Assisting students to use the call number and indexes to find materials in the library;
- Identifying the coverage of a database and searching online databases for articles and information.

1.1. CONCEPT OF INFORMATION

- Introduction – Definition of terms/concepts, different media and Characteristics
- Challenges of information explosion,
- Rationale for and benefits of IL
- IL - definition, standards, global developments

1.2. INTRODUCTION TO INFORMATION LITERACY.

- What IL is about?
- Relevance of IL skills to academic work

1.3. ROLE OF LIBRARIES IN UNIVERSITY EDUCATION

Types, services and functions of:

- Public libraries
- School libraries
- Special libraries
- University/academic libraries
- National libraries

1.4. INTRODUCTION TO LIBRARY CATALOGUE

- Types of catalogue and access points
- Physical description of catalogue
- Auxiliary tools of the catalogue
- Bibliographic description of a book; use of content page and index
- Basic electronic-based catalogue search
- Concept of union catalogue/sharing of library resources
- Exercises and Assignment

1.5. DATABASES

- What are databases? Features/characteristics of databases, Elements of databases: fields and records
- Types of databases –Manual (eg catalogues-card) and Electronic-(Standalone/OPAC; Electronic books, journals and other serials), Numerical/statistical databases, bibliographic, scholarly databases, information gateways, theses, academic databases, full text and partial full text databases, images, audio-visual
- What is a good database?
- Weaknesses and strengths of the use of databases
- Types of databases - Offline (e.g. CD-ROM) and Online (e.g. computer-based catalogue)
- Electronic databases at KNUST Library
- Offline CD-ROM (eg Medline, Cochrane Library, FAO, WHO, GAINS)

- Online Journal databases such as EBSCO, EMERALD, JSTOR, AGORA, HINARI, ELDIS, DOAJ; Catalogues eg OPAC

1.6. INTRODUCTION TO THE INTERNET

- What comprises the world wide web, servers, workstations, wireless links, radio links, satellite links, intranet, WAN, LAN, MAN, browsers, terms and definitions
- Interface to the internet, parts of a browser page e.g. address box, navigational links, hyperlinks search tools. Basic search for information and communication using the internet

1.7. INFORMATION RETRIEVAL SYSTEMS

- Electronic
- OPAC – Online Public Access
- Classification schemes, catalogues, bibliographical records
- Catalogue
- Search engines
- Meta search engines
- Information Gateways
- Scholarly databases

1.8. REFERENCE INFORMATION SOURCES

- Encyclopaedia
- Dictionaries
- Bibliographies
- Indexes
- Abstracts
- Almanac etc.
- CD-Rom
- Databases.
- Internet
- Audio visuals

1.9. EVALUATION OF INFORMATION SOURCES

ILS 302 – 3RD YEAR SEMESTER II

The course is aimed at:

- Introducing the students to the concept of searching for information on the net and evaluating the search results;
- Selecting an appropriate database for a research topic, and
- Developing an effective search strategy for searching databases;
- Demonstrating basic understanding of plagiarism and copyright as applied to the use of information;
- Introducing the students to the concept of internet evaluating information sources for accuracy, authority, objectivity, purpose, currency and appropriateness.

3.1. ACQUISITION AND ACCESS

- Acquisition options and criteria for acquiring a database
- Access Options- Password/username, IP address, pay per view models, open access, fee-based.

3.2. SEARCHING DATABASES

- Search Strategies Using Boolean and other operators
- Article databases, reference databases, databases vs. internet sources

3.3. EVALUATION OF DATABASES

- Criteria for evaluation-authorship, publisher, currency, format, level, referral to other source, point of view of bias

3.4. USE OF DATABASES

- Legal issues-Copyright, plagiarism, fair use etc
- Citation techniques

3.5. RESEARCH STRATEGIES/QUESTIONS

- Determine your information need
- Identify and develop a topic
- Find background information
- Develop a search strategy
- Find, gather, and evaluate the information
- Write and revise
- Document sources used

3.6. COPYRIGHT

- Concept of copyright, Creators/owners,
- Copyright materials- Print and Electronic
- Users of copyright materials, Restrictions e.g. Fair Use
- Importance, Evolution of Copyright Laws in Ghana
- Duration
- When people abuse copyright - Assignments, theses, exercises, quizzes etc.
- Intellectual Property Rights - Patents

3.7. PLAGIARISM

- Definition of the concept of plagiarism
- How documents are plagiarised - Photocopying, Physical verbatim extraction, scanning, imposition etc.

3.8. CITATION

- Definitions, types of citation – Harvard, APA, Chicago, Numbered, internet citation.
- Source of Materials to be cited – Books, Journals, Conference reports etc.

3.9. ADVANCED INTERNET SEARCHING

- Types of search tools, Boolean operators, other advance operators, searching the deep webs navigational links, hyperlinks search tools.
- Basic search for information & communication using the internet.
- Evaluation of content on the web (considering the accuracy, timeliness, authority, reliability, and validity of the information found). Citing of information sources.

Annex 2: PowerPoint Training Information Literacy

*This is a complete list of the slides of the Training Information Literacy – Searching e-Resources, with a summary of their content. The training was used for the sensitization of KNUST faculty during a three-day workshop in Kumasi, Ghana, in May 2009. There are many ways of regrouping the ACRL objectives into training modules. The following reasons have been used to regroup them in the way it was done for this training: (1) because of better search interfaces, many aspects of searching are best explained for databases than for the internet; (2) by first dealing with databases it is possible to put internet searching in perspective; (3) because of the emphasis on **searching** e-resources (i.e. mainly in databases and on the Internet) a number of important topics in information literacy received much less emphasis and have been regrouped into one module; (4) plagiarism, copyright, and citation also received special emphasis and were therefore dealt with in a separate module; (5) the module Internet: Past, Present and Future was conceived to provide up-to-date background on the reality of the information age in Africa and a general introduction to the topic of IL.*

1. **Introduction Training Information Literacy** – searching e-resources, KIT/ILS, May 2009: title page
2. About the Royal Tropical Institute (KIT), Amsterdam
3. About the Information & Library Services (ILS) department of KIT
4. Timeline of the collaboration of KNUST with KIT from Nov. 2007 to date.
5. Programme of the Training Information Literacy – Searching e-Resources Introduction
 - a. The internet: past, present and future
 - b. Database searching: basics
 - c. Database searching: advanced
 - d. Information Literacy
 - e. Plagiarism, copyright, citation
 - f. Internet searching
6. Training goals
 - a. Introduce faculty and researchers to IL – emphasis on searching e-resources
 - b. To contribute to the development of IL at KNUST
 - c. To enhance collaboration between faculty and university + college libraries
 - d. IL knowledge, skills, attitude through theory, practice, examples and experiencing searching e-resources
7. Learning objectives: participants
 - a. Will be aware of the usefulness of searching e-resources;
 - b. Will be able to carry out a search analysis and design a search strategy
 - c. Can use different searching tools and information sources
 - d. Will be able to use the basics of Boolean searching
- 8. Module 1: The Internet - past, present and future**
9. Global information production: 250 MB/person/year, but only 0.003% in printed form
10. Exponential growth: approaching 1000 Exabytes/year in 2010
11. Global internet distribution: Africa's share 1.5%, but rising rapidly
12. Optical fibre networks expanding in Africa
13. History of the internet
14. The Internet and the Web differ
15. How big is the web/internet?
16. Where will it end? The semantic web?
17. Databases and the internet: scientists vs. librarians (searching facilities)
18. The surface and deep web
19. Summary: Google increasingly effective
- 20. Module 2: Database searching - basics**
 - a. Databases, bibliographic or otherwise
 - b. Precision (specificity) and recall (sensitivity)
 - c. Keywords, subject headings, and limits
 - d. Common features of databases: search functionality and help functions
21. Database structure: records, fields, differences between databases

22. Precision (specificity) and recall (sensitivity)
23. Keywords, subject headings, and limits
24. The aim of database searching
25. Precision and recall: example using numbers
26. The relationship between precision and recall
27. Precision and recall: example using sets
28. Database searching: flow diagram
29. What must you know for database searching? Subject headings & thesaurus, keywords, operators, Boolean, parentheses, quotation marks, truncation, limiters, expanders, wildcards.
30. How to start searching in a new database: check out the features on the home page: help, database guide, advanced search etc.
31. Hints: thesaurus terms are crucial for high recall/precision. Conduct initial keyword searches to find them.
32. Example: PubMed
33. Basic database searching: summary.
34. Exercise: search for subject headings in a database and use them in a search
35. Databases searching in practice – KNUST
 - a. Physical databases
 - b. Electronic databases
 - c. Search practice
 - d. Who makes use of the databases available at KNUST (students, lecturers, researchers)
 - e. Courses, syllabuses, help by librarians
 - f. Is 'database literacy' changing over time?

36. Module 3: Database searching - advanced

- a. Concept analysis
- b. Building blocks
- c. Boolean searching
- d. Database selection
- e. Keywords and subject headings
- f. Limits
- g. Refining
- h. Search methods, including footnote chasing and citation searching
37. Concept analysis: distinguish main and sub-themes, find keywords and synonyms
38. Building block strategy to formulate search strategy
39. Strategy map to document synonyms, broader terms, and narrower terms
40. Boolean searching: the operators AND, OR, NOT or AND NOT
41. The difference between AND and OR, using sets
42. Keeping search records
43. Plenary and individual exercises using Boolean operators
44. Methods to increase precision: use more terms, apply limits, use exact phrase, ...
45. Reasons for lack of precision: poor analysis of subject, use proximity operator, ...
46. More reasons for lack of precision
47. Methods to improve recall: use fewer terms, explode subject headings, ...
48. Reasons for poor recall: wrong information source, redundancy, typing errors, ..
49. More reasons for poor recall
50. Search methods: most important one: Analytical search techniques, e.g. building block approach
51. Quick & dirty method: simple query composed of few terms, possibly linked by AND or OR
52. Best-match approach: simple query composed of many terms, without AND or OR
53. Successive fractions: successively refining a broad query using additional terms or concepts, field operators, or limits
54. Term expansion: expands the number of key terms by adding related words or synonyms
55. Interactive scanning: checking documents for information to be used for successive queries

56. Pearl growing: using the characteristics of a relevant and authoritative article, called a pearl, to search other materials⁸
57. Footnote chasing: locating useful information by searching the reference sections of other papers⁸
58. Citation searching: locating references that cite known articles published previously. Use e.g. citation index⁸
59. Database selection: academic libraries only offer a selection of databases available
60. Databases at KNUST. Exercise: find appropriate database and conduct a search.
61. Examples of common fee-based academic databases

62. Module 4: Information literacy: history, definition, etc.

63. History of IL: library instruction, information explosion
64. Purpose of IL: lifelong learning & better student/researcher/employee
65. Information standards: ACRL, SCONUL
66. IL cycle: Question, Source, Find, Evaluate, Combine, Share, Apply
67. IL definition at KNUST
68. IL as interpreted for this course
69. Formulating a research question: not so easy
70. Relevance of the scientific information cycle: primary, secondary, tertiary sources
71. Information source types in the scientific publication cycle: handbooks, articles, reports
...
72. Web 2.0: facilitating communication, information sharing, collaboration, social bookmarking
73. RSS: staying up-to-date
74. Information source evaluation: CARS

75. Module 5: plagiarism, citation - Academic integrity

76. Plagiarism, academic fraud, penalties
77. How to avoid plagiarism
78. Copyright
79. Citing: citation styles. APA, Chicago/Turabian, MLA. Citation managers: RefWorks, Zotero. Other citation tools

80. Module 6: Internet searching -Google, search engines, directories.

81. Web searching and database searching: structure and (un)controlled vocabulary
82. Differences between internet and databases: use internet for complementary information
83. Internet searching dominated by Google, "googling"
84. The limitations of browsing
85. What is a search engine?
86. How does internet searching work?
87. Characteristics of Google Web search: AND is default operator etc.
88. More Google search functions, such as filetype: searching, site: searching, Custom search
89. Google PageRank: how it works (more or less)
90. Search engine ranking compared, e.g. Yahoo vs. Google
91. More Google syntax: intitle, inanchor, inurl
92. More Google options: date searching, fill in the blanks etc.
93. Google tools: e.g. Google Scholar (alternative Scirus), Google Books, Google toolbar
94. Other internet search tools
95. Metasearch engines, e.g. Clusty
96. Multi-subject directories: Intute, Google Directory, etc.
97. Metadirectories: Hardin
98. Citation searching: commercial, free, "hidden" citation searching functionality
99. Exercise: citation searches in Google Scholar, Scirus
100. Final slide

⁸ *It is telling that search strategies based on pearl growing, footnote chasing, and citation searching (Slides 56-58, 98-99 in the PowerPoint presentation) are not in some way mentioned in the ACRL standards.*

Annex 3: Checklist of possible complementary measures

In addition to the recommendations in section 5.1, the following issues or complementary actions are suggested for consideration.

1. The library website

- 1.1. Subject guides and database information on the library website could be used to provide students and other users with guidance to library resources, free and subscription-based databases and so on.
- 1.2. The development of online training modules has the potential for providing just-in-time information for library users as well as for relieving strain on the training capacity.
- 1.3. Generally, attempts should be made to develop user-friendly library information interfaces, e.g. using the concepts of Interaction design, to increase the effectiveness of IL training and to avoid the need to train people in the use of user-unfriendly systems.

2. Library management

- 2.1. Master classes database searching could be conceived for upgrading the skills of some library staff. Such master classes could in turn be transformed into training derivatives for generic IL training.
- 2.2. Research topics that are particularly relevant for library staff at universities in developing countries will need to be identified. This is important, because academic librarians need to assert their status by stimulating research skills. At the same time, such research could be used to improve the planning of IL courses. Potentially interesting subjects include: (1) assessment, (2) database usage by postgraduates and faculty, and (3) internet usage with regard to development-related information in relation to database availability.
- 2.3. Library services in developing countries are underfunded. Monitoring systems will have to be put in place to keep track of planning efforts, implementation, and impact in order to confront decision-makers with the problems or inform them about the achievements.

3. The university

- 3.1. Strengthened IL among students and faculty has potential for subject-specific curriculum improvement. The planning and implementation of a research strategy is a good topic for designing training, outreach, and assessment products for faculty.
- 3.2. It is desirable that students/librarians/academic staff are fully computer literate before embarking on IL. This requires that future IL trainees have been sufficiently exposed to computer use. The provision of free, wireless internet access – as planned for at KNUST – is a good example of a complementary measure to achieve this.
- 3.3. The integration of IL in subject-specific curricula requires that faculty know how IL can enhance their classes and how IL should be assessed. Not only students, but also trainings must be assessed.
- 3.4. A co-ordinated approach, involving stakeholders from the library, university, colleges, and the faculties, is needed for a smooth integration of IL. Strategic planning and advocacy activities will need to be carried out to ensure that planning cycles are harmonized at all levels.
- 3.5. The impact of IL courses or modules on syllabus and curriculum development should be explored more actively. The impact can range from effects on the overall pedagogical environment to specific courses such as those on academic and research skills.
- 3.6. Limitations in training design with regard to the capacity for hands-on training of large numbers of students should be taken into account explicitly, considering that this is a serious constraint in the self-learning of staff and students.

4. At interuniversity or national level

- 4.1. Training-of-trainers workshops could present an effective approach towards providing librarian-trainers with the necessary skills and knowledge to train other academic staff and/or students.
- 4.2. National IL workshops could be conducted as part of a national approach to share expertise and experiences nationally. The highly appreciated round-table that was held between the universities of Cape Coast, Winneba, and Sunyani in January, 2010, is a good example that could be expanded upon. Such national workshops could help increase the awareness of trends in IL skills training, reflect on developments elsewhere, and facilitate peer support. New initiatives that will assist library and information professionals to meet the challenges facing them in their profession must be encouraged, strengthened, and supported.
- 4.3. Each academic library should be provided with an essential IL library for training staff.

Annex 4: Checklist of points of attention in IL planning

For ease of reference the following points of attention in IL planning are summarized. They are based on the observations in chapter 3 Characteristics of an information literacy programme.

- √ **Mission**
Clarify what is meant by information literacy in the context of the proposed training e.g. IL for research or IL for lifelong learning.
- √ **Goals and objectives**
While developing the IL syllabus and its teaching content, pay attention to goals and objectives. This is an iterative process.
- √ **Planning**
The key issue here is not whether information literacy is necessary or not, but how much support is provided for both intercurricular and intracurricular information literacy.
- √ **Administrative support**
Long-term commitment to IL education embedded in the organization will require a considerable and continuous advocacy effort in the future. See also point 9.1.
- √ **Articulation with the curriculum**
Institution-wide introduction is the first priority, gradually to be followed by institution-wide integration. Further integration at department or college level is to follow after continued development and advocacy.
- √ **Collaboration**
The prospects for integrating IL concepts in subject-specific course will be enhanced if faculty is better acquainted with IL itself and with successful ways in which it can be integrated.
- √ **Pedagogy**
In the beginning, IL training may have to be teacher-centred. Only with better personal access to the Internet, more hands-on or individual training of students or faculty can be contemplated.
- √ **Staff**
Library staff and disciplinary faculty all need adequate training. Adequate opportunity for exercising the newly acquired skills must also be provided.
- √ **Outreach**
Communication should not be ignored, because it will only be to the detriment of the IL programme as a whole.
- √ **Assessment**
In the beginning, most attention will have to be focused on the development of appropriate examination materials. Much of this can be found on the Internet. In a later stage, assessment of the training courses themselves should become the object of evaluation.
- √ **Digital library infrastructure**
The library website must provide subject guides and database information to guide users to library resources, free and subscription-based databases and so on.
- √ **Information skills**
All entrants should be grounded in the same basic skills in order to be able to fully benefit of any IL training. In addition, adequate opportunities for exercising and enhancing skills should be guaranteed for all students, faculty, and library staff.