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Automated Medical Record Tracking System for the Ridge Hospital, Ghana Part I: Systems Development and Design

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Abstract

The astronomical increase in patients' attendance at health institutions has led to the creation of large volumes of records, thereby confronting medical records managers with the challenges of managing these records. The problem is compounded when patients' medical records are maintained with manual records retrieval systems. At the Ridge Hospital, the manual medical records tracking system contributes immensely to the problem of missing patients' medical records and delays and long queues patients endure before receiving medical treatment. This paper employs the systems analysis and design approach (also known as systems development lifecycle) to design and develop an automated medical records tracking system. This proposed system is a case study at the Ridge Hospital, Ghana. The system is limited to the tracking and management of in patients' records. Based on the adopted methodology, preliminary investigations and analysis of the manual system were conducted to determine the scope of the problem. Following systems analysis, the Microsoft Access database system was used to develop a logical design to automate the manual tracking system. The design was developed into an operational automated medical records tracking system using Microsoft Visual Basic 6 codes. The developed system does not only track records faster and more efficiently than the manual system but can also perform other records management functions such as the generation of reports on patients' admissions and discharge.

Introduction

Regardless of how medical records are filed in a health care facility, the important thing is to know where a record is - in or out of file - or should be when needed. Even when not in file, case notes should at all times be easy to locate. All tracing and tracking systems, whether manual or computerised, are designed to: (1) monitor the trajectories of issued-out records and (2) provide a means of telling whether a record is in or out of file. How quickly and easily they perform these functions is mainly a matter of detail (design and technical sophistication).

Record location problems are universal to all medical record departments. Often, the most frustrating chart searches occur within the department with records staff systematically looking through stacks of charts. As the uses and demands for patients' information increase, so does the need for more efficient retrieval and tracking methods. An automated medical records tracking system is

resourceful in providing fewer tasks in retrieving and tracing the movements of records.

In Europe and North America, and other wealthy economies, automated record tracking systems have been developed to address problems inherent in manual systems. A study conducted by Adjei (2000) reveals that simple but efficient medical records tracking systems are very common in Scottish and English Hospitals, citing the examples of the Royal London Hospital, West Glasgow National Health Service Trust Hospitals and hospitals in Edinburgh. In these hospitals, it is reported that tracking systems make keeping tabs on records movements simple and trouble-free.

Kuehn and Stewart (1996) report that a sophisticated record tracking system which is gaining currency in North America is the barcode technology. With scanners stationed throughout the hospital to log records traffic, light terminals to sign records in and out, and on-line booking and reservation facilities, the need for paper work has been minimised. Other services the system delivers include 24-hour monitoring of all records movements; listing of records out of file for extended periods and customised reports and statistics. Wherever in use, this technology is considered to have significantly improved the quality of medical records services.

Currently, the Ridge Hospital has a computerisation program that handles the creation of new hospital identification numbers for patients. The system is designed to create a soft copy of patients' bio data and other pieces of information including occupation, address, region of birth, etc. The program is basically an integrated database management system with the capabilities of generating reports by simple instructions. The system can also run basic query functions such as finding out daily outpatient attendance, number of new identification cards created, and so on.

One deficiency of the system is that it has no record tracking component. The purpose of the present study is to fill this gap by designing a simple record tracking system to complement the current computerisation efforts at the Ridge Hospital.

Overview of the Organisational Setting

The Ridge Hospital is a 172-bed general hospital. It is located in Accra, the national capital of Ghana. Once known as the European Hospital, it was established in 1928 to cater for the health needs of Europeans during the colonial era. Today the Ridge Hospital functions as a regional hospital for the Greater Accra Region. In this capacity the Hospital accepts referral cases from polyclinics, private hospitals, quasi-government hospitals, and health facilities in the districts.

The hospital is structured administratively into three main divisions: Clinical, Clinical Support and General Support Services. The Clinical Division comprises Internal Medicine, Paediatrics, Obstetrics and Gynaecology, Surgical, Dental, and Accident and Emergency. The Pharmacy, X'Ray, Laboratory, Physiotherapy, Blood Bank, and Public Health constitute the Clinical Support Service. Departments under General Support Services include General Administration, Medical Records, Catering, Environmental Health, Welfare, Transport and Maintenance among others. All the medical units receive a great deal of service from the Records Unit. There are about 180,000 outpatient records and close to 100,000 inpatients folders, whilst about 150 records are generated daily. Thirty six doctors including 9 specialists, 192 nurses and 197 paramedical staff work in the hospital.

The Problem

The Ridge Hospital has a policy on records movements. Request for medical records must be recorded in order to monitor and manage records movements. Despite the existence of rules for borrowing records, the tracking system is beset with a number of problems because the modus operandi for folder request or transfer from one user to another are not followed.

The Ridge Hospital has a simple system of registering medical record loans and returns. The hospital uses a simple booking-out notebook (Folder Movement Book) with these pre-headed columns: borrower's name, user's name (if different), date of issue, record identification number and purpose for which the record folder is required, date of return and signing off. Chronological listing, although perfectly reliable, has one important drawback: it is time-consuming physically to have to go through the

book(s) to establish where, and with whom, an out-of-file record is located. Besides, human error is rife, and as medical records staff report, 'the problems of medical records location, are endemic'. The most often cited reasons for records being lost temporarily, or permanently, involve one or more of the following human errors:

Misfiling;
Files not being returned to records departments for shelving after borrowing;
Files being borrowed without being issued out;
Borrowers unofficially passing on loans to second parties, who pass them on to third parties; and so on.

In situations where requests for folders are for emergency cases, staff may postpone the requests recording proceedings in a folder movement book. However, if the folder request records are not updated later, such a folder may be difficult to track in future.

Within any tracking system, these, among other factors, present tough problems in a manual system. The time taken to track records at the Ridge Hospital in many cases depends on how long the records have been inactive. Tracking a folder that was used a month earlier takes a shorter time than a folder that was last active six months earlier. This is due to the structure of the folder movement book, which requires some time to go through pages and many rows and columns.

Where a record cannot be traced from the folder movement book, other finding aids, Daily Ward State Book and Admission and Discharge Book are used. These can provide information about a patient's last visit to the hospital, the ward in which the patient received treatment and other relevant information which can aid tracking investigation.

Another prevalent problem with the manual system is that there is no appropriate mechanism to determine which folders are in transit or on shelf. It is only when an attempt to retrieve a folder on shelf fails that the folder movement book is consulted for information about the folder's transit point. Thus, one cannot know by any means whether a folder is present on shelf or not until a user requests for it. This is because there are no tracer cards which can be used to check for folders in transit.

Accordingly, this study sought to explore, identify and analyse in greater detail the difficulties inherent in the manual record tracking system at the Ridge Hospital with a view to designing an automated tracking system.

Methodology

The systems design and analysis or systems development methodology was employed for the study. This methodology is described by authors such as O'Brien (1997), William, Sawyer and Hutchinson (1999) and Laudon and Laudon (2000) as efficient in appraising, building alternatives and offering a step-by-step procedure for examining and developing an information system. The systems analysis and design methodology entails the following steps: preliminary investigation, systems analysis, systems design and systems development. These steps are described in detail in the study.

Preliminary Investigation

Preliminary investigations began by seeking background information about the Ridge Hospital. The structure of the Records Unit and records management practices, principles and policies were studied carefully.

Data collected through interviews with records managers, nurses, doctors and hospital administrators, and by critical observation revealed that the manual system is heavily challenged due to high patients' attendance rate. This consideration supported the need for automation to minimise the problems associated with the manual system.

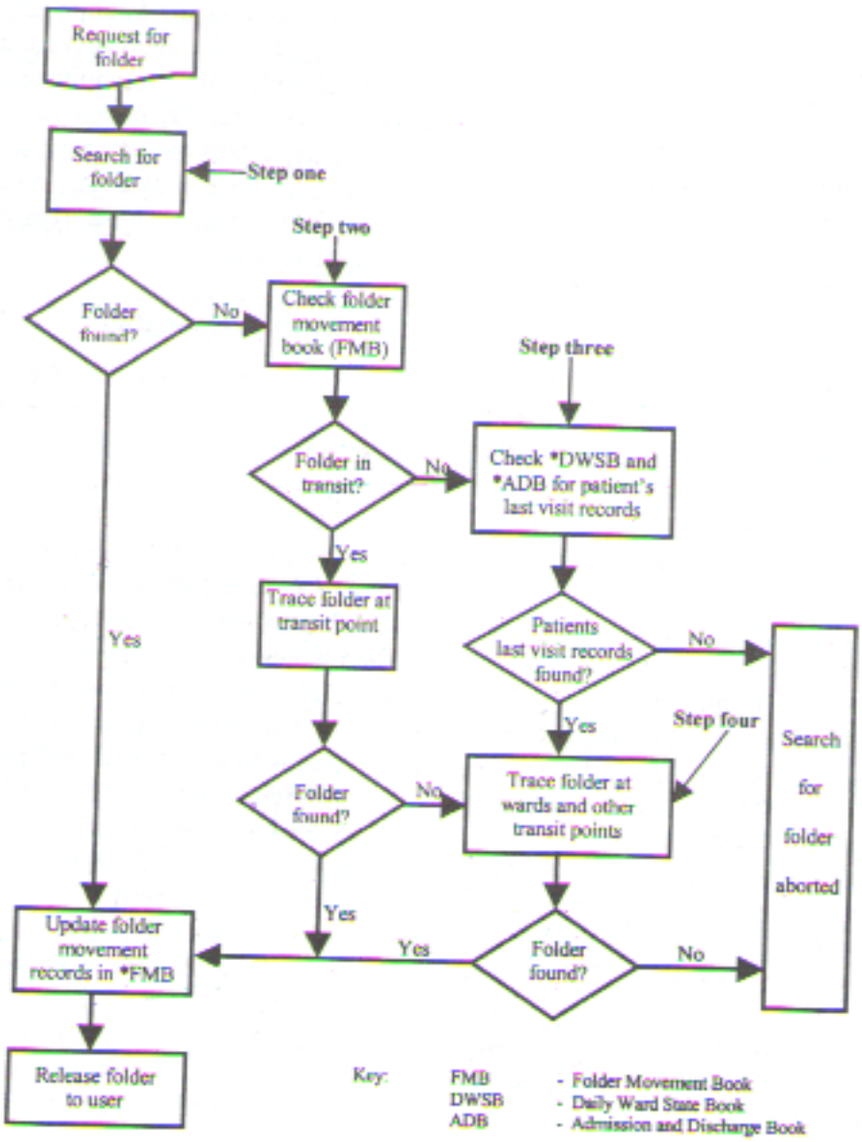
To design an automated tracking system for the Ridge Hospital simply means automating the folder movement book. To this end the folder movement book was studied critically so that it can be restructured into an automated system. This was considered alongside the other tracking aids, such as the daily ward state book, and the admissions and discharge book to be integrated into a central database system. Thus, the system becomes multipurpose, which can be used also to generate

reports.

Systems Analysis

The systems analysis stage dealt with detailed studies of all the steps and procedures involved in the manual system of tracking records. The use of the folder movement book was critically examined to reveal major problems inherent in the manual system. Apart from interviewing some key staff members, data were collected through careful observation of the manual system. The data were presented as a flowchart (Figure1) to reflect how the folder movement book and other finding aids are used to track records. Figure 1 shows how records are tracked in the manual system.

Figure 1: In-patients Folder Tracking System



Step One

At step one an attempt is made to search on shelf all folders requested by a user, with the assumption that the folders have been returned to the records unit by the last users. If the folders are found, all requests proceedings are recorded in the movement book and then submitted to the user.

Step Two

The folder movement book is consulted to trace folders' transitional point. At this point it may be helpful to find the last time the patient was admitted. Such information may be obtained from the patient or other sources, such as the admissions and discharge notebooks. When folder information is found in the folder movement book, it is then traced at the transitional point. If it is not found the tracking then continues by following investigation proceedings at step three. If the folder is found at the transitional point request information is updated in the folder movement book before submitting to user. Otherwise, step four is followed.

Step Three

All the recording books are checked to retrieve a patient's last visit information such as ward of admission, date discharged or whether a patient was transferred from one ward to another. All other folder movement books are consulted. The folder is then traced to all possible transitional points (step four). Request proceedings are then updated in the folder movement book if the folder is found, otherwise the folder search is aborted with the assumption that it is missing.

This step requires a lot of intelligence and detective work to track the folder. A missing folder may be found on a doctor's desk in his office, under some other files in the ward or in other obscure places. However, a successful search depends on accurate information about a patient's last visit.

Step Four

Step four is the real physical search for folders at all possible transitional points. This include ward of admission, transferred ward, accounts, pharmacy, consulting rooms and sometimes offices of doctors. This step also depends on accurate information about a patient's last visit, as this can speed up the search process.

Systems Design and Development

The system design stage in a development life cycle began with a logical design followed by physical design specifications to establish major systems requirements, namely input requirement, output requirement, storage requirement, processing requirement and maintenance requirement.

From the preliminary and systems analysis stages, it was realised that a database management system was needed to centralise all folder requests information to aid tracking of folders. Significantly, Figure 1 also revealed that the speed at which a folder could be traced and retrieved depends on quick access to available folder request information. The request information needed include last date of folder request, last user, transit point, etc. This meant that an information retrieval system based upon a database system was required. In constructing the database system, attention was paid to the type of database model that could best suit the system.

Database Models

Data model is a structure or logical principle for organising and representing data. Laudon and Laudon (2000) and William, Sawyer and Hutchinson (2000) categorised the structure of database as models, namely hierarchical, network and relational data models. The hierarchical model presents data by arranging from the root, which is a top level segment to a lower level segment. This resembles a parent-child relationship. Figure 2 illustrates how a folder would be traced if the hierarchical model of arrangement was used for the automated system.

The network model "is a variation of hierarchical model" (Laudon and Laudon, 2000). A database can be converted from network into hierarchical model and vice versa. Unlike the hierarchical model, which is a one-to-many, the network model functions as many-to-many arrangement. It permits a retrieval of specific information in a database from different

Figure 2: Example of Hierarchical Database Model

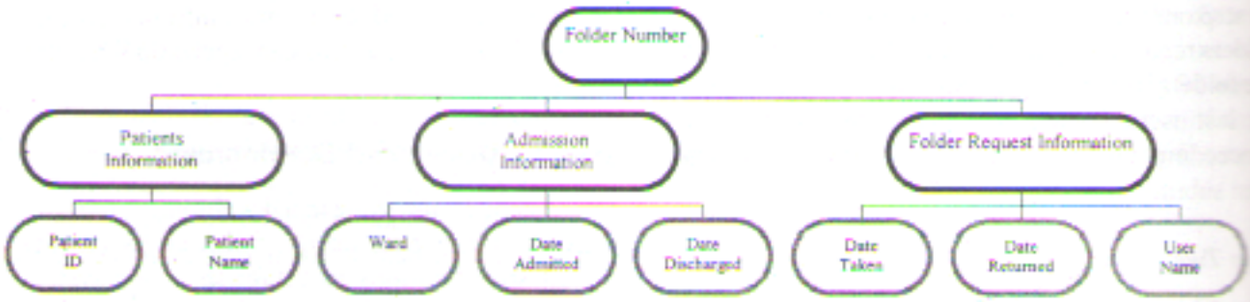
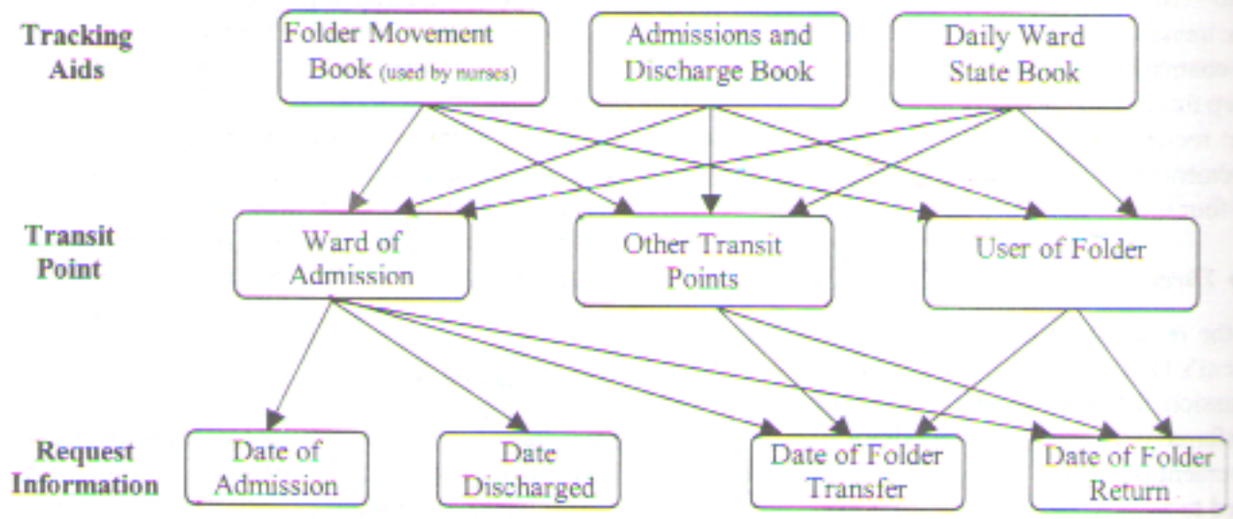


Figure 3: Example of Network Database Model



sections within the database system, but follows a sequential order of arrangement.

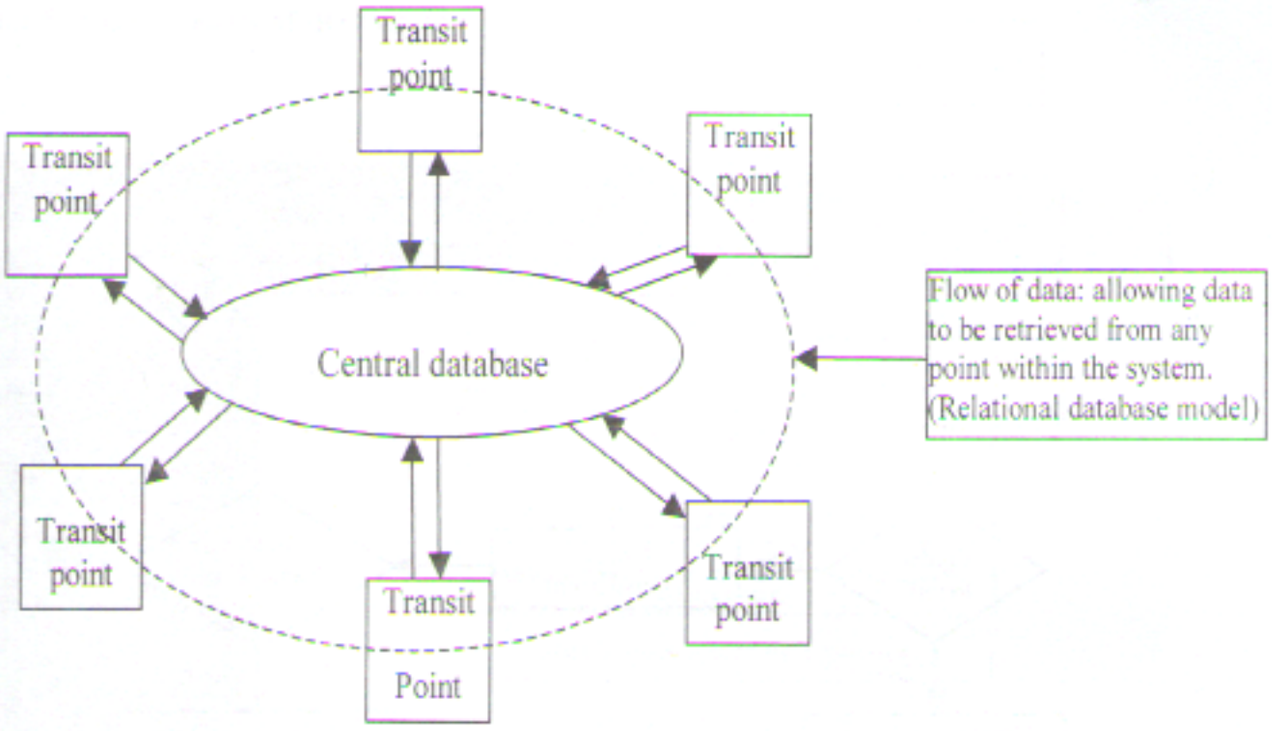
Step three in Figure 1 resembles the network data model for tracking folders, which has no request information in the folder movement book. In such a situation, the other finding aids such as the admissions and discharge book, daily ward state book, and the folder movement book used by nurses are used for tracking as illustrated in Figure 3

The relational database is more flexible and does not restrict itself to paths like the other. It is an integration of the other two in data representation, arrangement and retrieval. The proposed automated tracking system is based on this structure. All tables of the databases of the system are linked to each other, and to the central database, making it relational. It makes it possible to retrieve data from any transit point within the system without following a restricted path. Figure 4 is an illustration of a relational database model using the case of the Ridge Hospital as an example.

Microsot Access database 202 with its structured query language (SQL), which has relational-data modelling capabilities, was used at the logical design stage to create a database system meant to function as the folder movement book, the daily ward state book and the admissions and discharge book. Finally, the detailed automated designed was customised and refined with the Visual Basic 6.0 programming language .

SQL is used to specify how a system should combine and select data from a table or tables within

Figure 4: Relational Database Model of the Automated System



a database. Burrow and Langford (2000) defined structured query language as "the standard for report manipulating database management system." With SQL incorporated into the automation programme, report generation and retrieval of specific information such as folder request for tracking of records can be done more efficiently.

The Design Interface

Figure 5: Folder Tracking Procedure

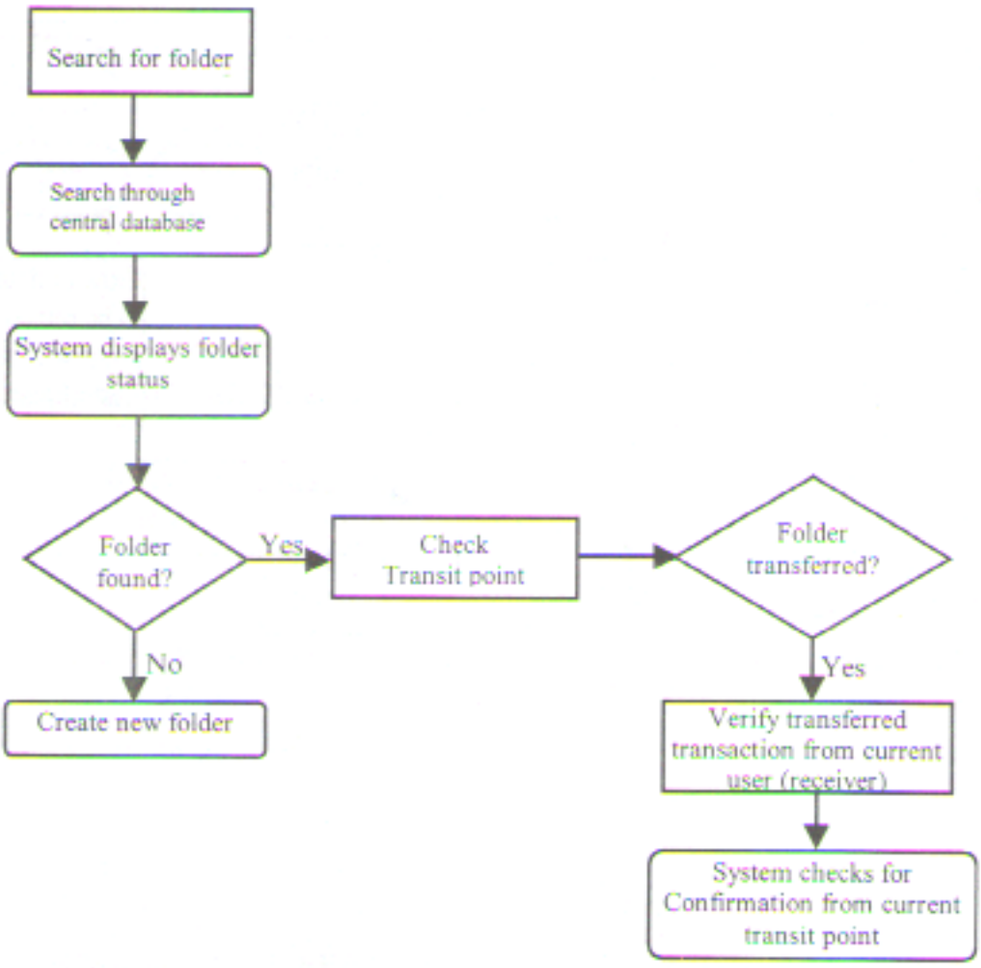


Figure 5 is an automated system version of the manual dataflow diagram shown in Figure 1, and reflects how folders are tracked in the automated system. As depicted in Figure 5, tracking a folder can be done from any transit point. If it appears that a folder is transferred from one user to another, the system can be commanded to display details about the transfer. This is done to find out whether the supposed current user has confirmed that a folder has been transferred to him.

Figures 6 and 7 show main windows of the system and transit points. Based on Figure 5, Figures 8 to 11 show an example of how the system tracks folders.

Figure 6: Main Window of the System

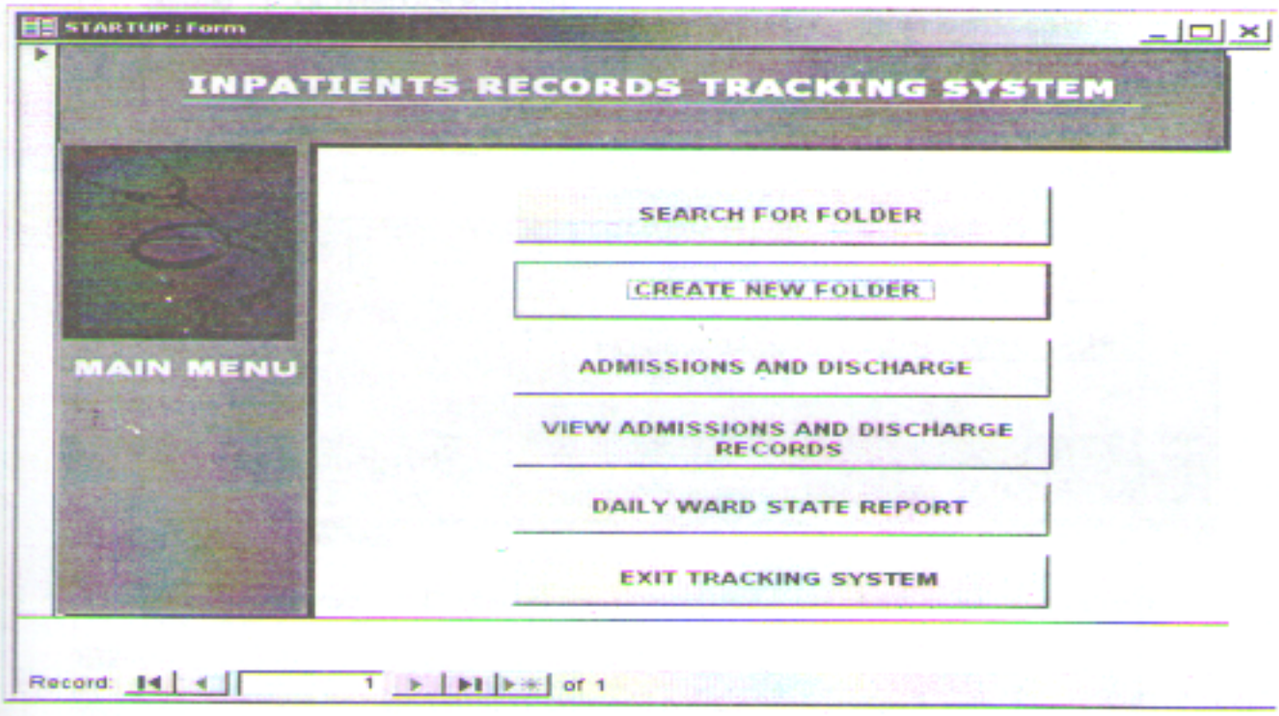
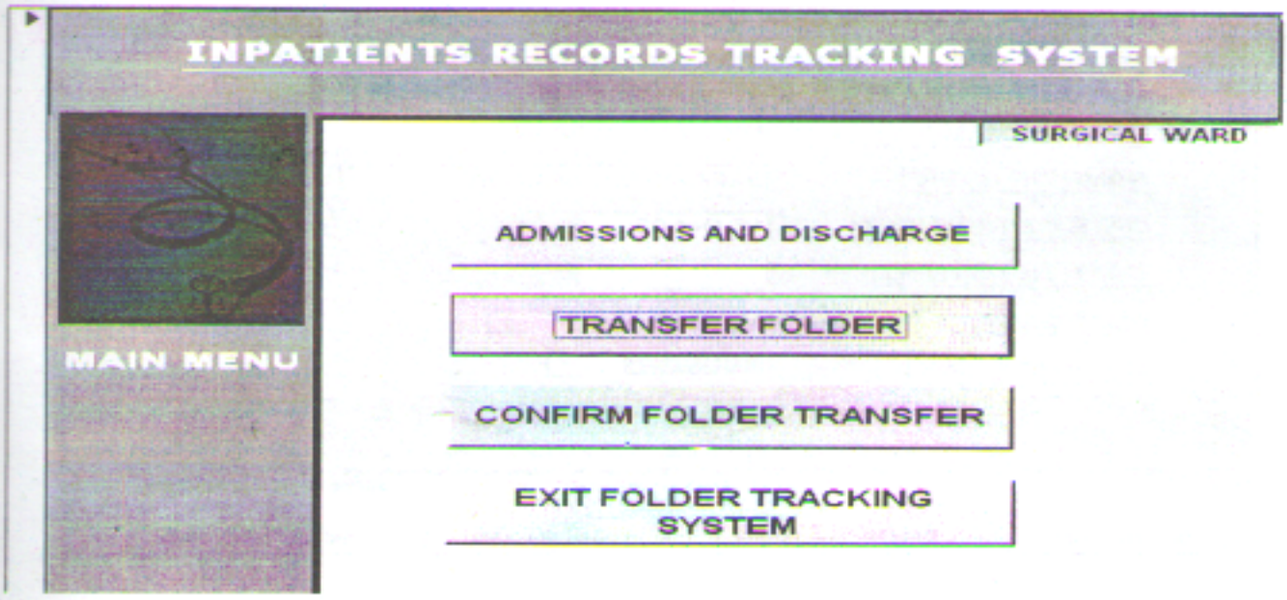


Figure 7:Example of Main Windows of Transit Points (Surgical Ward)



Display of folder request information during tracking:
The folder status states that it is on shelf.

Figure 8: Display of Folder Request Information During Tracking

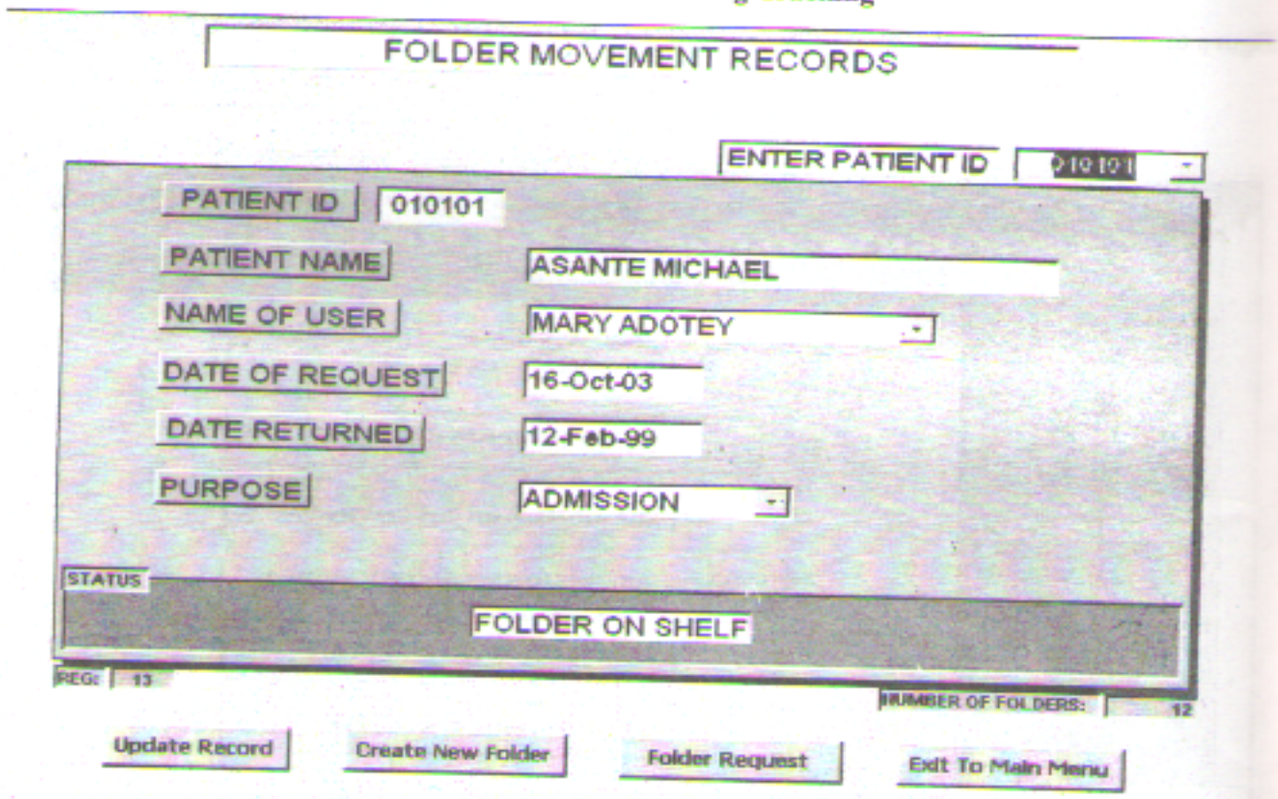
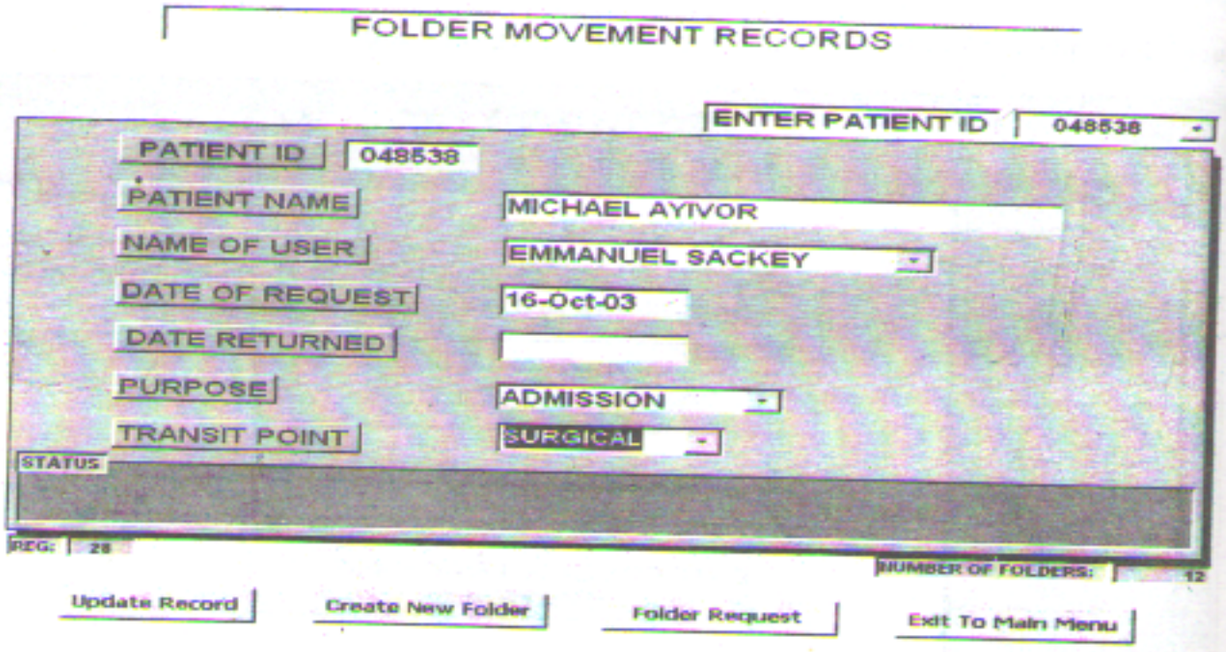


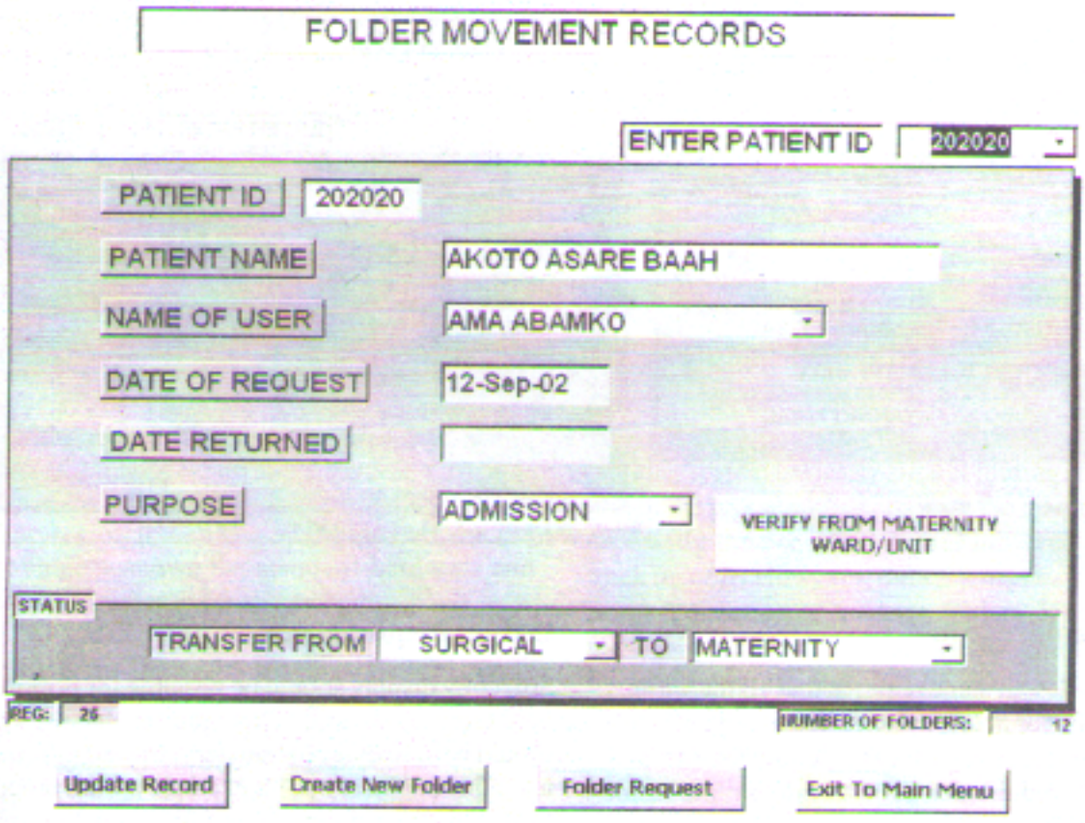
Figure 9: Display of Folder Request Information Showing Transit Point.



The system shows that the folder being tracked has been transferred from the surgical to maternity ward.

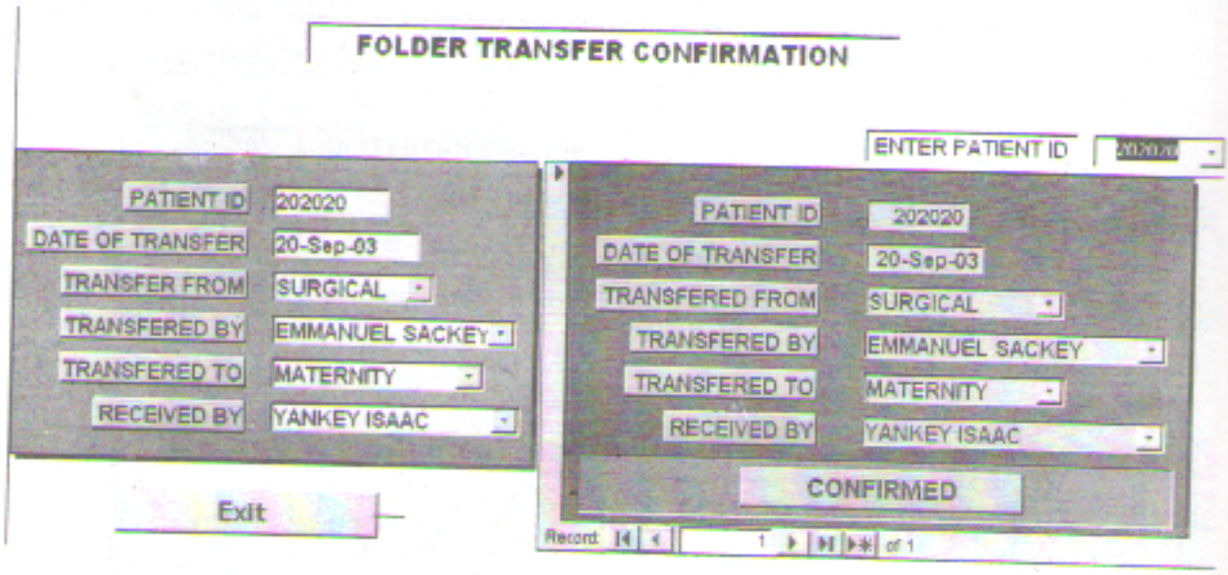
The transfer details can be verified by clicking "VERIFY FROM MATENITY WARD/UNIT" command button.

Figure 10: Transfer Details



The system displays transfer details after clicking "VERIFY FROM MATENITY WARD/UNIT" command button. The user from the maternity ward has confirmed the transferred details. This, however, proves that indeed the folder's current transit point is the maternity ward.

Figure 11: Confirmation of Transferred Details



System Requirement

The system design stage requires that all the various requirements for a new system, input requirement, output requirements, storage requirements and maintenance requirements must be determined after a logical design. William, Sawyer and Hutchinson (1999), recommended that functional capabilities of the system should be described at this section.

Input Requirements

The input requirements considered users of the program and data entry method. Staff at the records unit have at least skills in mouse usage, which presupposes that graphical driven and menu driven interface should be suitable. For an automation tracking system, the user interface should be such that a user spends seconds to retrieve needed information by just a few mouse clicks or menu item selections. In view of this, the input interface is designed with list, check, and combo boxes, option and command buttons. These are features of graphical driven interface, which facilitate speedy data entry and retrieval of records.

Output Requirements

Soft copy display should be possible for printing if a hard copy is required. This requires that the system should have features to transfer retrieved information into other applications, for example a word processor, to aid suitable printing layout. William, Sawyer and Hutchinson, (1999) recommended that irrespective of the output (soft or hard) a database designed with a format such that headings, columns, rows, menu etc., are clearly distinctive in appearance.

Processing Requirements

Software and hardware for running an automation programme basically determines the efficiency of a system in relation to retrieval and processing speed. Running a database with modern database management systems requires high speed processing capacity, such as Pentium IV, large hard disk size, including the use of Redundant Array of Independent Disks (RAID), and servers for efficient operations.

Though the Microsoft Office XP version of Access Database System and Visual Basic 6 codes were used for the development of the automation system, it is also possible to run the program on previous versions of the mentioned platforms. It could be made possible by straightforward conversion from current version to other previous versions. The decision to convert to older platforms will mean that management of the hospital is not yet ready to upgrade from the present Microsoft Windows 98 and 2000 edition operation system software, and Microsoft Office 2000 which is commonly used at the hospital.

Microsoft Office has complex software utilities that can aid a preferred report layout and other analytical tools such as graphs, chart, etc. The hardware requirement first examined the processes involved with the tracking system, the storage requirement, and the total volume of operations within the system.

Communication and networking facilities are also required for the system. Modems, network cards, port hub, and Ethernet cables with basic accessories for a local network must not only comply with the software platform on which the operation system is built, but also require a capacity that can match up with features of the software designated for the system. Table 1 shows the standard hardware and software requirements for the system.

Table 1: Hardware and Software Requirements

HARDWARE/ SOFTWARE	MINIMUM CAPACITY/ SPEED/VERSION
Storage	10 Mega byte (Mb) for each computer
Memory (RAM)	64 per computer
Disk Operating System	Windows 98: Windows XP preferred
Microsoft Office	Office 97: Office XP preferred
Network Card	Ethernet type
Network cables	Ethernet standard cabling
Port Hub	24 channel
Processor	Pentium 400 Megahertz per PC
Keyboard	102 keyboard
Mouse	PS2/Serial Mouse
Monitor	15 inches

Source: Roger Jennings (1999), Special Edition Using Microsoft® Access 2000
http://www.microsoft.com/hcl/

The automated system required that all the transit points for folders should be networked, and information and communication facilities installed appropriately at all transit points. This would enable a standard operating speed for the automated system. The records unit must however be equipped with a server machine with a large storage device and high speed processing capacity. The server will serve as a backbone for efficient electronic storage purposes.

A minimum of 40 mega byte hard disk, Pentium III processor, and 512 random access memory size could be given as server properties. The transit points suggest a minimum of 24-channel port hub with all the computers having network and Ethernet adaptors and cables. All the computers at the transit points must run the same operating system and office suite program such as Microsoft Office.

Conclusion

An automated tracking system is one of the mechanisms to enhance the effective management of patients' medical records. The designed automated tracking system basically aims at finding solutions to part of the problems that confront the manual system, especially the use of the folder movement book to track records. However, the system goes beyond the primary function of tracking folders. It can also be used to generate daily ward state, admissions and discharge reports, and can be queried to generate daily, monthly, quarterly and annual reports.

The authors seek to develop a system to cover both outpatients and inpatients records. If this automated tracking system is put to effective use the future challenges of the system would reveal strategies to improve the system in order to gain high efficiency level and enough flexibility. This would ultimately enable the system to be expandable to cover all medical records management activities at the Ridge Hospital.

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Disaster and Security Management in Public Archival Institutions in ESARBICA Region

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Abstract

When archivists accept holdings into their repositories, they are taking responsibility for the custody for these materials. All their efforts may come to naught if the archives are lost as a result of a disaster or breach in security. Security and disaster management are the key to the protection of archival materials from human and natural disasters. Unfortunately, far too many archives in the East and Southern Africa Regional Branch of the International Council on Archives (ESARBICA) member states have neither a disaster-preparedness nor a security plan in place. Many archivists in the ESARBICA region recognise the need to protect their holdings, but they fail to develop disaster-preparedness and security plans due to a number of factors including inadequate funding and staffing, and shortage of supplies. However, these problems should not prevent archivists from developing disaster-preparedness and security plans to protect their holdings. The process of developing disaster plans is very simple, although it is time consuming. Archivists do not need high tech and expensive equipment and supplies to develop sound plans.

Context and Caveats

Archives and records document the history of nations and institutions. They help to foster identity and establish the rights of individuals. The loss of records and archives through disasters could leave organisations and nations without identity, history or proof of rights. Disaster preparedness and security are vital to the preservation and protection of records and archives. Disaster planning facilitates efficient and quick response to an emergency, and security protects items against theft or deliberate or unintentional damage and destruction. In this regard, disaster preparedness and security are fundamental to ensuring access to, and preservation of documentary materials into the future.

Despite widespread acceptance in the professional literature of the usefulness of disaster preparedness and security in managing documentary materials, their actual use in repositories has been far more limited (Buchanan, 2000; Law, 1999; Ngulube, 2003a). Unlike in the United States where Conway (1990) found out that 56% of the respondents had disaster plans, a survey of disaster planning in libraries and archives in England, Wales and Northern Ireland showed that only 6.6% of the institutions had disaster control plans in use (Feather, 1991; Jenkin,1987). A study carried out by Trinkaus-Randall in Massachusetts's libraries and records repositories found that only 7% of the 960 institutions that were surveyed had disaster plans (Trinkaus-Randall, 1990). In Zimbabwe, Mlambo (2000) discovered that 65% of government ministries did not have any disaster plans for their records. A study by Ngulube (2003a) demonstrated that disaster preparedness and security of records and archives did not form a significant part of the preservation activities of archival institutions in South Africa.

The dearth of disaster plans is complicated by

the fact that:

- there is limited training about disaster preparedness;
- there are insufficient resources to preserve the national documentary heritage; and
- many buildings housing records do not have adequate space for the collections as well as facilities to protect files from environmental factors (Ngulube, 2003b).

Research has shown that many institutions with disaster plans rarely review, update or test them. Staff are not adequately trained in emergency procedures. There are no formal standards for preparing and educating personnel to work as emergency planners and managers. In some instances there are no disaster planning teams in place, although disaster plans exist. In addition, the disaster plans rarely cover all aspects of disasters that organisations are likely to face. For instance, a study by Ngulube (2003a) revealed that disaster plans of most South Africa's archival institutions did not cover many natural disasters.

When archivists accept accessions into their repositories, they are taking responsible custody for these materials. They should protect these materials from disasters and from theft and vandalism. All their efforts in acquiring, arranging, describing and preserving archival materials may come to naught if the archives are lost as a result of a disaster or breach in security. Security and disaster management are key to the protection of archival materials from human and natural dangers and disasters. Unfortunately, far too many archives in the ESARBICA region have neither a disaster-preparedness nor a security plan in place. In fact, too many archivists in the region have not even given serious thought or effort to the development of either of these plans.

On that account, can it be said that the national documentary heritage of ESARBICA member states is safe? Before answering the preceding question it is necessary to provide the definition of the terms and scope of the study, case studies depicting disasters, security and protection of records, risks management and basic information that should be contained in disaster preparedness plans.

Scope of the Study and Definitions of Terms

Although the remarks on disaster management made in this study could be generalised to many countries in Africa, they are limited to ESARBICA member states that comprise Angola, Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zanzibar and Zimbabwe. The study is limited to public archival institutions that are mandated by government legislation to preserve the documentary heritage of their respective countries.

Private archives are excluded in this study because so far they have not yet played an active role in the affairs of ESARBICA, although the constitution of ESARBICA accommodates their membership. A study of the state of affairs in relation to disaster management and security in private archives remains pertinent. The results of the study might fill some knowledge gaps on the management of archives in private organisations.

Although humankind tends to associate "disasters" with devastating floods, hurricanes, earthquakes and other catastrophes, risks and hazards to documentary materials include insects and rodents, mould and humidity, tornadoes, earthquakes, forest fires, volcanic eruptions, power outages, leaking roofs and pipes, sprinkler discharges, fuel or water supply failures, chemical spills, arson, bomb threats, and acts of war and terrorism, to mention a few.

Specifically, a disaster can be defined as an unexpected occurrence inflicting widespread destruction and distress and having long-term adverse effects on the conduct of normal activities. In the context of the information environment, Alegbeleye (1993) defined it as an event that "results in the sudden removal of records and documents from accessibility and use." In that sense, a disaster can be regarded as an occurrence that temporarily or permanently renders information contained in documents inaccessible. On the other hand, Lyall (1995) characterised a disaster plan as:

> a document which describes the procedures devised to prevent and prepare for disasters, and those proposed to respond to and recover from disasters when they occur.

In an information management environment, disaster preparedness refers to strategies employed to protect documentary materials, their users and managers from any unexpected or accidental danger. According to Fox (1998) disaster preparedness "is a natural part of responsible custody."

The case studies sketched in this article demonstrate that risks and hazards to documentary materials are widespread and documents will never be safe from disasters. Enlightened self-interest tells us that to be prepared is the greatest weapon against disasters. Put differently, an ounce of prevention is worth a pound of cure. Disaster planning induces organisations to assess their vulnerability to all kinds of disasters.

That means that information professionals in general, and in the ESARBICA region in particular, should make disaster preparedness the hallmark of their activities. According to Alegbeleye (1993) and Ogden (1996), disaster management plans have the possibility of

- reducing disruption of normal operations;
- minimising the economic impact of the disasters;
- raising awareness of the importance of being prepared for disasters;
- providing for training of personnel in emergency procedures;
- coordinating disasters; and
- providing for rapid and smooth restoration of services.

To that end, information professionals should formulate disaster plans in order to secure their documentary materials and make them accessible over time. Continued access to any nation's documentary heritage hinges upon its being protected by its custodians. Good governance and preserving society's collective memory depend on accessible records.

Case Studies on Disasters

The great library at Alexandria established in the third century BC was destroyed by fire first in 47 BC during the time of Julius Caesar and then finally in 373 AD. The 1966 Florence flood destroyed 2 million volumes of cultural objects in the Bibliotheca Nazionale Centrale (Feather, 1991; Law, 1999; Varlamoff, 1999). The Public Records Office of Ireland was burnt to the ground during the 1922 Civil War leading to the loss of Irish cultural heritage from the Middle Ages to 1790 (Senator Manning, 1996).

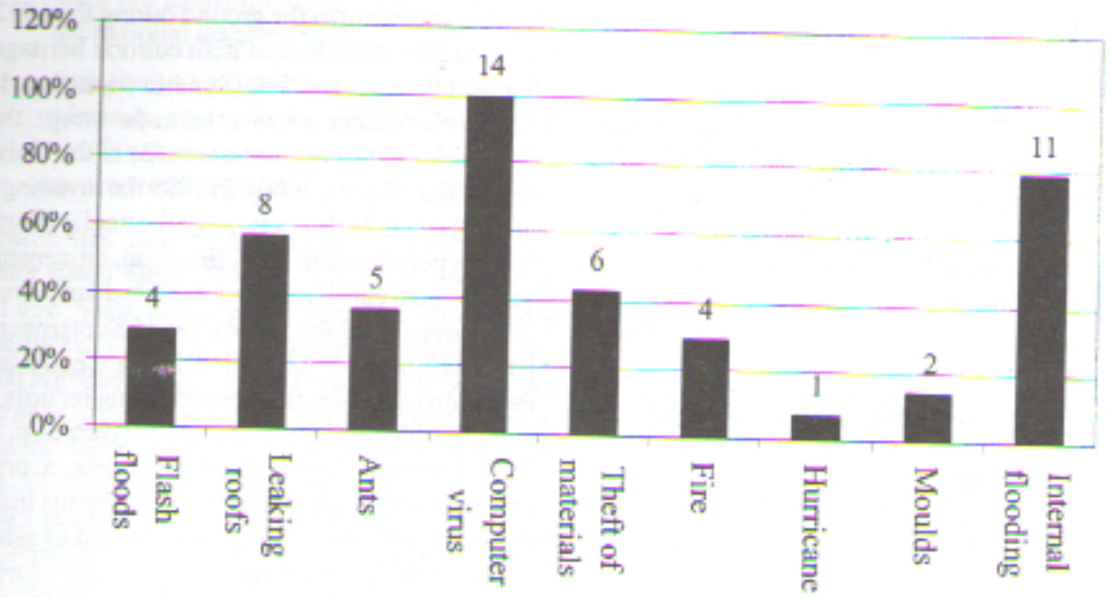
In November 1998 a tornado swept through Columbia destroying some records of the University of Missouri (Jones, 2000). In 1999 the invading forces of Slobodan Milosevic systematically destroyed records pertaining to land, financial, citizenship and genealogical entitlements of the Albanian community in Kosovo (Ngulube, 2004). On 11 September 2001, terrorist bombed the World Trade Centre and the Pentagon Library in the US destroying records, books and other documentary materials (Harrison, 2002). The "National Library and Archives, a priceless treasure of Ottoman historical documents including the royal archives of Iraq, were turned to ashes in 3 000 degrees of heat" on 14 April 2003 during the United States' invasion of Iraq (Fisk, 2003).

Fire caused extensive damage to records of the Secretariat Office in Kenya (Nairobi) in 1939 and in Pujehun town in Sierra Leone, 250 000 government records were lost to fire in 1991 (Alegbeleye, 1993). The Nairobi fire destroyed a vital portion of central government records (Musembi, 1984). Valuable records relating to one of the major cities in Africa were destroyed.

A hurricane destroyed valuable records and private manuscripts at the National Archives of Swaziland in 1984 (Alegbeleye, 1993). The Pretoria City Council in South Africa lost a range of records dating back to the 1920s in a fire at its Munitoria Building in March 1997 (Directorate State Archives and Heraldic Services, 1998-1999). Flash floods hit Mozambique's districts of Xai-Xai, Chokwe and Guija during the year 2000 (Maúngue, Mahumane & Mangue, 2003). These were the worst floods since 1850. Some documents were swept away and some were destroyed. Rental documents and pensions records were lost. Such a loss obviously compromises good governance, transparency and the ability to establish a just society.

Information gleaned from country reports of member states of ESARBICA from 1990 to 2000 shows that disaster in one form or another once

Figure I: Summary of hazards that once affected the documentary heritage of ESARBICA (Source: ESARBICA 1990-2000)



affected records in their respective countries (ESARBICA, 1990-2000). The disasters included: computer viruses (100%), flash floods (29%), leaking roofs (57%), ants (36%), fire (29%), hurricanes (7%), moulds (14%) and internal flooding caused by water from taps and pipes (79%). Six (43%) countries reported theft of documentary materials from holdings. Politically motivated disasters almost affected two member states in the ESARBICA between 1976 and 1990. For instance, civil wars in Angola and Mozambique threatened the existence of archival services and documentary evidence in some parts of these countries. Figure I summarises some of the hazards that once affected the documentary heritage under the jurisdiction of the national archival institutions in the ESARBICA region.

The list of case studies on hazards to documentary materials is endless, but the examples given in the preceding texts are illustrative enough to convince information professionals in ESARBICA of the reality of disasters. It is evident that disasters can be either natural or unnatural. The case studies given above suggest that disasters that could be attributed to natural causes are less than those linked to human error.

Evidence given in Figure I suggests that disasters strike all records, irrespective of format. Computer viruses once wrecked havoc in all the fourteen member states of ESARBICA leading to substantial loss of information. In that light, organisations that use digital objects should design disaster plans that include electronic records. However, it would appear that many organisations are more concerned with the competitive advantage they derive from information and communication technologies than the risks they face in using them. It has been estimated that 40 per cent of companies that suffer a major disaster to their information and technology systems subsequently go out of business (Schlicke, 1998).

Most of the documents that were lost in the disasters outlined above are not replaceable at any price. The challenge to the custodians of the archival heritage of the ESARBICA region is to protect records and make them accessible to present and future generations. The following sections briefly discuss security and protection of documents, risks management and the basic elements of a disaster plan before making conclusions and recommendations.

Security and Protection of Documents

Security and protection of documents encompasses activities that are undertaken to discourage crime and to prevent or minimise damage to holdings. According to Shuman (1999) some security considerations that must be addressed in an information management environment include:

- Building security
- Equipment security
- Materials security
- Electronic security
- Personal security.

Risk assessment and installation of fire detectors, security alarms and sprinkler systems, regularly maintaining plumbing and drainage systems, and storing holdings in areas that are not prone to water damage could address some of the safety concerns identified above, particularly the security of materials (Fox, 1989).

What are archival professionals in the ESARBICA region doing to protect archival holdings from some of the areas identified above? In my personal electronic mail communications with heads of archival institutions in the ESARBICA region, it was found that most of the archival repositories employed security personnel to protect their holdings. Closed circuit television cameras (CCTV) were used in five instances. Some of the repositories of archival institutions in the ESARBICA region used intruder alarm systems. However, detectors and alarms were not regularly tested. Access points to the archival buildings were controlled in all archival institutions. Keys to the archival buildings were not widely accessible and they were kept in a secure place. It was also revealed that liaison between archival institutions and fire departments was very limited. The security of records and archives could be compromised by the lack of close liaison between archival institutions and fire departments. Some archival institutions did not have automatic fire detection systems. The situation has improved since Moyo's (2000) study, as institutions in ESARBICA without automatic fire detection systems have dropped from 95% to 64%. Ninety-three per cent of the archival institutions in the ESARBICA region also lacked electrical backup services. One repository had alternative sources of electric power such as a generator. Lack of electrical back-up systems could compromise the security of public records and archives in the ESARBICA region. Most security systems such as fire alarms -and CCTV depend on a reliable source of power in order to work efficiently.

One area of security of archival materials that is often overlooked is employee theft. Employee theft can lead to considerable loss of archival documents (Ngulube, 2003b). Archival institutions should make sure that they vet their employees before engaging them. Employee thefts occur less often when employees adhere to an established code of ethics (Shuman, 1999). However, very few archival institutions in the ESARBICA region are governed by a code of ethics. Stocktaking of holdings was rarely done. Hence, archival institutions could not easily detect theft and loss of materials. Given the scenario depicted in the foregoing paragraphs, one can conclude that the security of records in archives repositories in the ESARBICA region cannot be guaranteed within reasonable limits.

Risk Management

In safeguarding their holdings, information professionals should be aware of the risks and hazards associated with managing records irrespective of their formats. Risk management methodologies provide some tools that can be used with some adjustments to develop disaster management plans. The following section demonstrates how a risk management process can be used to develop disaster preparedness plans.

Risk assessment and risk analysis are the foundation of risk management. Risk analysis helps organisations to identify possible threats and how the organisation is vulnerable to those threats. On the other hand, risk assessment assists organisations to evaluate and assess the adequacy of controls in relation to dealing with identified threats (Wold & Shriver, 1997). In that regard, risk management helps organisations to identify, analyse and evaluate risks that are likely to affect them and the adequacy of the available controls to deal with the probable disasters.

There are six major steps in the risk management

process reported in the literature (Department of Commerce 2004; Standards Australia's AS/NZS 4360). They comprise defining and identifying the scope and boundaries, identifying and defining risks, analysing potential risks, evaluating the risks, developing response strategies to deal with the risks and monitoring and reviewing risks. In the context of archival holdings, risk management is more than just the management of dangers to documentary materials; it is also the management of the risks that the interventions may pose to the documents, as well as dangers to the users and employees during and following the disaster.

Macro-level plans tend to be institution-wide, while the micro-level ones address a particular potential threat to documentary materials in a specified area. The fourth step in the risk management process may assist archivists to design micro-level plans depending on how they would have classified the threats to their records. All archival institutions should have macro-level disaster plans. Their ability to develop micro-level disaster plans would be determined by resources, although the goal should be to eventually have them.

Basic Information that should be Contained in a Disaster Prevention Plan

To be truly useful, a disaster plan must address all aspects of emergency preparedness: prevention, response, recovery and mitigation. There are many models for disaster plans (see the list of Internet resources at the end of this article for further details).

The first step in the actual construction of a disaster plan is to define its scope, that is, what areas of concern need to be addressed, what special needs the institution may have, and the amount of detail necessary for the plan to be workable. A basic disaster plan should inter alia include (see Brown, 2004 and Internet resources listed at the end of this article):

- Actions to be taken in any emergency
- Summary of evacuation procedures which are to be followed in an emergency
- Emergency telephone list
- Disaster team
- A list of personnel who can be called in to assist, or who should be notified if their department is affected in an emergency
- A list of any information concerning the security of the building or the collections which would affect the response to a disaster
- State the constituent parts of the fire detection and suppression equipment, for example fire alarms, smoke and heat detectors, sprinklers, hand-held fire extinguishers and standpipes and hoses
- Details of the emergency supply kit
- A list of in-house resources, including emergency services available from within the institution, list of items which the institution keeps in stock, the locations from which they may be obtained and a list of names and telephone numbers of any personnel who must approve access to in-house supplies and services
- A list of items not stored in-house, but can be obtained locally in an emergency, including a list of the name, address and telephone number of the most convenient suppliers
- A list of agencies, consultants or companies which can provide services such as cold storage, freeze drying, and expert advice on recovery
- A list indicating collection priorities including the location of the collections
- Floor plans showing holdings priorities
- Institutional floor plans
- Possible risks to holdings (internal and external)
- Inventory of shared emergency supplies
- Provisions for training of employees
- Provisions for ongoing review and revisions.

Conclusions

This discussion of disaster and security management was not meant to provide the reader with all the answers. It was, however, designed to get the reader

to ask the right questions. Nevertheless, one conclusion is inescapable: the national documentary heritage of the ESARBICA region cannot be guaranteed within reasonable limits unless disaster preparedness and security of documents are integrated into the management of archival institutions. Many countries in the ESARBICA region are not prepared for disasters.

Countries in the ESARBICA region that are more prepared for disasters than others should help those that are lagging behind to incorporate disaster-preparedness and security planning into the operation of their archival institutions. All archival institutions in the ESARBICA region should be encouraged to prepare disaster prevention and response plans in order to safeguard the archival heritage of their constituencies. The use of risk management methodologies could help in that regard. The plans should be well researched and tailored to fit the specific needs of each institution. The plans should encompass records both in the traditional paper-based environment and the electronic one. Archivists should be prepared for the worst and plan for the best in managing and protecting the cultural heritage under their custody.

The process of developing disaster plans is very simple, although it is time consuming. Archivists do not need high tech and expensive equipment and supplies to develop sound plans. Disaster and security planning can result in policies and procedures that define the ways in which staff and users must respond on a day-to-day basis as well as in crisis mode to disaster and security questions. Having such plans can mean a big difference between losing or salvaging society's archival heritage in the event of a disaster as well as safeguarding the users and custodian of archival materials.

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Some Useful Internet Resources

The Internet is a useful resource for information on disaster preparedness and recovery. The following is a selection of sites that were used to compile information on the generic disaster plan outlined in this article. These sites can help one to get started even if one does not have ready access to an expert on disaster planning and management.

New York University Libraries (2003) Disaster Plan Workbook. Available: http://library.nyu.edu/preservation/disaster/toc.htm. Accessed 14 October 2004.

The workbook outlines the appropriate actions that should be taken in the event of a disaster. It provides a set of disaster priorities and emergency procedure protocols.

PATRICK NGULUBE

Smithsonian Institution, National Archives and Records Administration, Library of Congress & National Park Service (1993) A Primer on Disaster Preparedness, Management and Response: Paper-based Materials. Available: http://palimpsest.stanford.edu/bytopic/disasters/primer/ Accessed 14 October 2004.

Provides useful information on disaster preparedness, management and response for the salvage of books, documents, and other paper-based materials.

SOLINET. n. d. Disaster Mitigation and Recovery Resources. Available: http://www.solinet.net/preservation/

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A useful resource on supplies, leaflets and other publications, videos and Internet links to information on disaster management.

Western New York Library Resources Council (1994) Western New York Disaster Preparedness and Recovery Manual for Libraries and Archives. Available: http://www.wnylrc.org/pub/disman.htm#REFERENCE. Accessed 14 October 2004.

The manual gives guidelines for the development of individual disaster plans in archives and libraries. It may be of benefit to those institutions which lack staff expertise to develop their own disaster plans. Questions or comments about the manual can be directed to Lisa Sievert at ac237@freenet.buffalo.edu.

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Collection Mapping as an Evaluation Technique for Determining Curriculum and Collection Relationship: The University of Botswana Experience

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Abstract

The importance of curriculum and collection evaluation, and the use of the conspectus approach in the development of collection mapping in academic libraries and how it is practised at the University of Botswana Library are discussed. The conspectus approach allows for systematic collection development. The approach provides clear information, and through the process of mapping, a graphical representation of the strength of the collection is created. It concluded that collection mapping, through the use of the conspectus, is an excellent way of matching the collection to the curriculum, and has proved useful in identifying the gaps in the collection, which are filled through systematic selection.

Introduction

Curriculum and collection evaluation should be part of the library collection development process in academic libraries, even though it is time consuming (Snow, 1996). Credaro (2001) opined that it ensures that the policy goals, as reflected in the development policy document, are reflected in the collection, and that the needs of the customers, as reflected by the customer profile, are met. Through the process of collection evaluation, sometimes also referred to as analysis or assessment (Credaro, 2001), or verification studies (Pastine, 1996), balanced collections are developed in a most cost-effective way. Collection mapping is one of the several methods or combination of methods librarians can use to evaluate the collection (Rosenblatt, 1994). Collection mapping as a process of evaluation assists with the identification of areas of strength and weakness in the present collection so that through focused acquisition processes, gaps and inadequacies can be filled. The need for a careful selection of materials has become even more critical now in view of the dwindling budgetary allocations for academic libraries, particularly in developing countries. The objective of this paper therefore is to share the experience of the University of Botswana Library in systematic curriculum and collection evaluation practice with other universities especially in developing countries.

Review of the Literature

Academic library collections are developed to meet the specific needs of their institutions' academic programmes. According to Daigneault (2004), "the curriculum is the frame upon which we build the collection. Collection effectiveness thus depends on the extent to which research can be conducted and how much students can rely on it for projects and assignments. Thus, traditionally, the primary purpose of the library... "was to meet the academic community's information needs" (Dugan, 2002). As Pausch and Popp (1997) pointed out, "accountability, outcomes measurement, and assessment are the subjects of much discussion in higher education." Library collections consume a large portion of the budget and so libraries have to ensure that what is collected matches or meets the expressed needs of their customers. The processes of ensuring that such

needs are met through evaluation are many, as noted by Rosenblatt (1994) and Pastine (1996). Although many libraries have written collection development policies, librarians find it difficult to put into practice what these policies state. The reason, as Snow (1996) has observed, is that collection policies are theoretical than practical; hence they provide an intellectual guide to selection rather than a practical method of selecting materials.

Nevertheless, collection development policies are important and have been one of the tools for collection development in which libraries define collection parameters relevant to the needs of the curriculum and research. What has been lacking in practical terms is how to reflect what is happening in the classroom to the collection in order to minimise failure of finding required information for assignments, projects and research. As Pastine (1996) stated, ..." an academic library's reputation is no longer primarily based on quantity and numbers of volumes held...but rather on quality of the collections along with access capabilities."

As a key professional function, evaluation and analysis of collections are therefore critical in collection development (Pastine, 1996). Pastine (1996) identifies a number of methodologies in the literature which have received varying acceptance and usage in academic and research libraries. Some methods rely on collecting qualitative or quantitative statistics (Credaro, 2001). Quantitative statistics would include variables such as the current number of items in the collection, number of items added or rate of growth, items available per student, comparisons to recommended lists or to similar library collections, and the study of the age of the collection through visual inspection.

On the other hand, qualitative approaches include analysis of circulation and inter library lending (ILL) statistics and in-house use studies of materials before items are shelved. A user satisfaction survey of faculties and students which employs questionnaires or evaluation forms is another technique. This method is sometimes followed up with telephone consultations with faculty (Silveria, 1996). Studies of the citations and bibliographies of customers' publications to find out if items cited are available in the collection are also employed in collection evaluation and for the assessment of possible customer satisfaction (Pastine, 1996).

As noted in *Collection Mapping: the Cumulative Approach in the Policies and Procedures Manual Web Guide* (n.d) "The need to adequately resource the curriculum at a level appropriate to the goals of a particular school and educational system requires the application of both qualitative and quantitative standards. Both of these criteria are fulfilled by the Cumulative Approach." The American Library Association (1996) recommends the use of the "conspectus" which provides an overview of a collection's strengths and collecting intensities. A conspectus arranges the collection by subject, classification, collecting levels and language preferences (Franklin-Essex-Hamilton, 1999). Ferguson, Grant and Rutsein (1988) cited in Pastine, (1996) noted that , "the conspectus is a tool that records past and present strengths and weaknesses. It shows where the strong collections are ...". Pastine further notes that a conspectus, among other things, can:

- help identify materials for storage
- better define... areas requiring particular attention
- be used to set priorities for collection growth
- be useful in working with academic staff
- describe a library's collection to accrediting agencies.

Using a conspectus, the collection can be analysed in a number of ways. The collection can be analysed as a general collection catering for a wider variety of needs such as general reference collection. It can also be analysed by a specific subject or discipline, also referred to as an 'in-depth' emphasis, to ascertain the extent to which the collection could cater for specific subjects. The collection could also be analysed by looking at a specific course or module of a course, individual research profiles or specific material format.

The conspectus was developed for use in academic libraries and serves as a catalyst for systematic collection development. The method provides clear information, and through the process of mapping a graphical representation of the strength of the collection is created. The idea is to divide the collection into small and manageable...."segments

matched to various parts of the curriculum" (Livingstone, 1997). Thus, the intention is to build the collection in pieces and tailored specifically to the curriculum.

Credaro (2001) compared three methods: survey of user opinion, which is user centred (through questionnaire or interview); the use of conspectus approach which uses a very detailed set of subject descriptors; and then the cumulative approach, which combines some of the above methods. Credaro's study concluded that "the success of any method of assessment depends on how well it meets the goals of the evaluation."

Lamb (2004), writing on the evaluation of multimedia, says that collection evaluation can centre on either the collection or the customer. Three methods are identified: collection mapping, circulation statistics and patron survey. In collection mapping, collections are divided into three main segments of basic collection, general emphasis collection and specific emphasis areas (Collection, n.d.). The general emphasis collection would contain materials that support a whole course, such as computer science, and then the specific emphasis segment would contain materials that support individual units of computer science such as programming or database management.

Lamb opined that "Collection mapping helps librarians to review the strengths and weaknesses of the entire collection through a graphical representation" and that the "idea is to look at the quality, quantity, and condition of the collection." Ubogu (2003) points out that the findings of a conspectus study indicate exactly where the library is strong and weak and the amount that would be needed to bring the collection or acquisitions rate to a specific level. Thus, collection assessment can be used in the process of budget estimates as it would be based on the actual figures or statistics resulting from a comparison of the present collection in a given subject area against the relevant course unit (Franklin-Essex-Hamilton, 1999). Daigneault (2004) reported: " I divide the budget by priorities and set aside certain amounts for each area of the curriculum. I don't try for balance; instead, I try to fill curriculum needs." The author adds, "When the collection is pertinent to the curriculum, it will be used."

The University of Botswana Library (UBL) Collection Development Policy

The University of Botswana Library Collection Development Policy specifies that "... The Library aims, among other things, to select and acquire the best and affordable current and seminal world thought to support, primarily, the diversified academic and professional fields of research, teaching and study by the University and also to provide general support to national development. As a guide to the selection and acquisition of materials, the library has developed this collection development policy, which is a written guide, or formal selection policy statement. This policy links the Library's acquisitions methods to the University teaching, learning, and research" (University of Botswana, 1998).

The analysis of collection is based on the collection policy tool also referred to as the 'Conspectus'. The conspectus approach uses a very detailed set of subject descriptors, with standard codes allocated by the library to indicate the depth of coverage of a particular subject. It is defined as an overview or summary of collection strengths and collecting intensities, arranged by subject, classification scheme, or a combination of both, and containing standardised codes for collection and for languages of materials collected. This approach is thus collection centred that is based on the actual resources of the library.

The University of Botswana uses an alphabetical range to differentiate the levels of library investment necessary to support introductory, undergraduate, graduate and research programmes. Statements defining such consideration include: language, chronological emphasis or restrictions, geographical emphasis or restrictions, treatment of subject, types of material, and date of publication. Below is the specific collecting level assigned to each subject subdivision.

Level A - Minimal: Indicating that only highly selective purchases, usually materials either for reference use, general interest, or for the support of very specific research need, will be made.

Level B - Undergraduate: Indicating that standard works and selected current works, mostly in the

English language, will be acquired to support undergraduate instruction. This will include reference works presenting a survey of the current knowledge of the subject in broad outline, as well as files of basic journals. Retrospective purchasing is restricted to standard works.

Level C - Research: This indicates that the library will acquire as broadly as possible the significant current primary and secondary sources relevant to advanced research in the field (subject to restrictions specified in the subject statement, e.g. language. This level allows for selective programmes of retrospective purchasing.

Level D - Comprehensive: This Indicates that all currently published relevant materials will be acquired (subject to the restrictions specified in the subject statement). This level allows for extensive programmes of retrospective purchasing and searching for lacunae.

Level E - Exhaustive: Indicating that the library will attempt to acquire all relevant published materials in most editions and transactions. Manuscripts and other supporting non-book materials are acquired extensively as the budget permits. This is the level appropriate for the creation or maintenance of a special collection (University of Botswana, 1998).

It is, however, worth emphasising that the conspectus approach assures quality at the level of selection of materials. Therefore, as much as possible, the subject librarian has to adhere strictly to this approach during selection.

Collection Development at the University of Botswana Library

The collection development guides at UBL are the collection development policy and the departmental handbooks. Each subject librarian must ensure he or she is equipped with these two vital documents on assumption of duty in the library. Each subject librarian is responsible for a subject or a cluster of subjects based on subject background and/or experience, and is expected to select relevant materials to satisfy the needs of the curriculum for the various courses within the subject(s) (Lumande and Mutshewa, 1999). The departmental handbook, which details the programme offerings of each department, the course codes and titles, and the course outlines guides such selection. The selection tools include: reviews (online and print), publisher catalogues (online and print), and the Blackwell selection slips. The subject librarian interprets the course outlines to identify specific subject areas each course is focusing on, and then selects relevant materials in all formats to service the course at the appropriate collection level, bearing in mind the collection statements mentioned above. The course code used at UB is such that it is possible to identify the appropriate collection level for a particular course. For example, for courses in mathematics, e.g. MAT 221, the first digit indicates the year level of course; the second digit indicates the subject area and the third digit indicates the semester. This suggests that A and B would be the collection level for this course. Subject area codes for mathematics are:

0 - General Mathematics
1 - Algebra
2 - Analysis/Differential Equations
3 - Topology/Geometry
4 - Computational Mathematics/Numerical Analysis
5 - Mechanics
6 - Mathematical Modeling/Linear Programming/ Operations Research
7 - Statistics/Optimization
8 - Mathematics for Teachers
9 - Engineering Mathematics.

Evaluation of collection: the curriculum/ collection mapping

The University of Botswana uses the Dewey Decimal Classification (DDC) scheme for organisation of collections. Each subject librarian is expected to evaluate collections in his/her subject areas of responsibility. The librarian does this by identifying the Dewey Decimal Classification (DDC) numbers for the subject covered in the outlines for each of the courses, which have been previously analysed during the collection development exercise (i.e. interpretation of the course outlines). All courses

needing materials on these subjects are then brought together under one general title with the course codes. The materials for these courses are then counted as a way of determining the size of collection to service those courses. There are two ways currently being used to accomplish this - the use of the web version of the online public access catalogue (Web OPAC), and the management report system, both available through the library's innovative interface library software.

Using the web OPAC, the subject librarian goes through the 'search the catalogue' facility of the OPAC and then proceeds to use the call number to search the catalogue. The search is conducted for each format of materials, e.g. 540 ZZZ for books, PH 540 ZZZ for pamphlets, MM 540 ZZZ for multimedia items, and R 540 ZZZ for reference materials and the number of records recorded in a table. Since the subject librarian also has the responsibility of ensuring that recent materials are acquired, the numbers of records for recently published and acquired materials are also evaluated. It is the responsibility of the librarian to define the recency of the materials by choosing a benchmark date to classify materials as new or old. The subject librarian then sorts using the 'limit this search' facility of the web OPAC. This facility allows the user to limit by year of publication and material type. Table 1 shows the curriculum/collection analysis of relevant materials for a few of the courses offered by the Department of Mathematics. In the example, any materials published in 2000 and above are considered new.

The use of the management report system of the library's innovative interface software package (INNOPAC) available through telnet is not different from that of the OPAC. Just as described above, the steps involve querying the management report system for bibliographic records of the materials by call number in all formats (e.g. 540 ZZZ for books, PH 540 ZZZ for pamphlets, MM 540 ZZZ for multimedia items, and R 540 ZZZ for reference materials), and then sorting by the MARC record tag 260 (for publication information, which normally shows the date of publication) to allow for easy counting of recently published materials acquired when displayed.

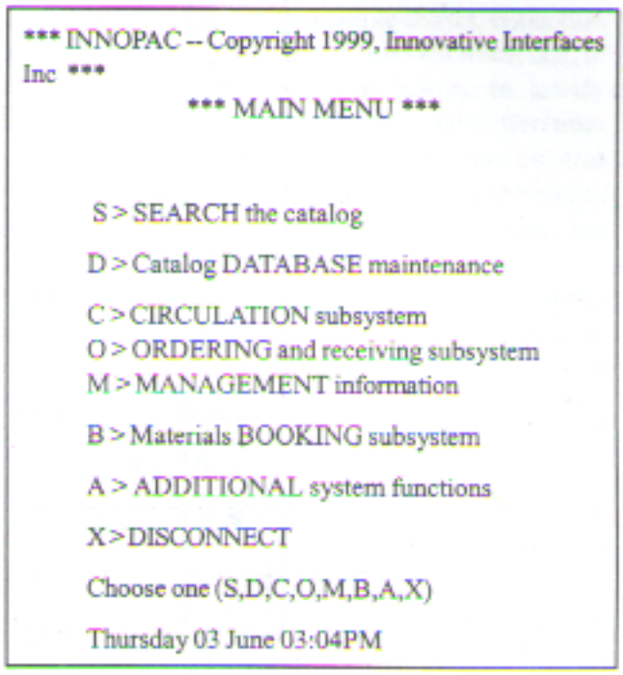

Figure 1: ***INNOPAC Management System Interface***

Below are the detailed steps in the management report system of INNOPAC:

- Choose M - Management Information (fig.1) (the management information menu is displayed)
- Choose L - Create lists of records and type your password as required
- Select review file to work on, e.g. 01, etc.
- Empty review file if not empty by typing E and responding "y" to empty
- Choose "N" for New Boolean Search
- Choose "B" for "Bibliographic list to create a list of records required. Do the same for all formats
- When list has been created, Press <space> and choose "S" to sort records (using the MARC tag 260) in order to get the number of recently published materials as you may want to define it.

Table 1: Curriculum and Collection Analysis for Mathematics

Subjects & course codes	Dewey Number	Collecting level	Books Old	Books New > =2000	Pamphlets Old	Pamphlets New >= 2000	MM Old	MM New > =2000	Ref Old	Ref New > =2000	Total Old	Total New >= 2000
GMaths **General Mathematics** MAT 101, 102, 201, **400, 402, 404**	510 – 511.9	ABCDE	1266	823	19	0	8	0	23	6	1316	829
A **Algebra** MAT 111, 211, 212, 311, 312, 411, 412, 414, 416	512 – 512.97	ABCDE	639	598	1	0	0	0	3	0	643	598
ACE Analysis/Differential Equations MAT 122, 221, 425, 426 Computational Mathematics/Numerical Analysis MAT 242, 244, 342, 344, 441, 442. Engineering Mathematics MAT 291, 292, 391, 392, 394, 491, 485.	515 – 515.984	ABCDE	960	841	0	0	4	0	5	0	969	841

- Then choose "T" to display list and count umber of recently published materials.

In Table 1 the curriculum and collection analysis for mathematics are presented.

Table 2: Excel sheet showing data entry

	A	B	C
1		<= 1999	>= 2000
2	Gmaths	1316	829
3	A	643	598
4	ACE	969	841

For either of the two methods, the subject librarian uses Microsoft Excel table to produce the result in graphical form. The subject librarian enters the data as shown in Table 2. The result of analysis is then presented in graphical form (Figure 2).

From the analysis and the map, the subject librarian is able to identify the weak subject areas in proportion to the needs of the course. Effort must therefore be [illegible] in the next subject librarian's annual [illegible].

For instance, as the above example shows, collection effort must be concentrated on relevant materials, in accordance with the collection policy, to satisfy courses in Algebra (A); and Analysis and Differential Equations, Computational Mathematics and Numerical Analysis, and Engineering Mathematics (ACE). The evaluation also shows that there are adequate for these courses published recently.

However, of the two alternatives, the use of the management report system through Telnet is considered more accurate, as it displays only one bibliographic record notwithstanding the number of copies of the material item.

While the above exercise has proved useful in satisfying customer needs, the idea is to relate the curriculum/collection to the number of students. This should allow budget estimates to be made on actual number of books, subject to price fluctuation. The exercise is also important for availing the academic departments of the adequacy of materials to satisfy ongoing course offerings, and to guide the departments in the development of new academic programmes.

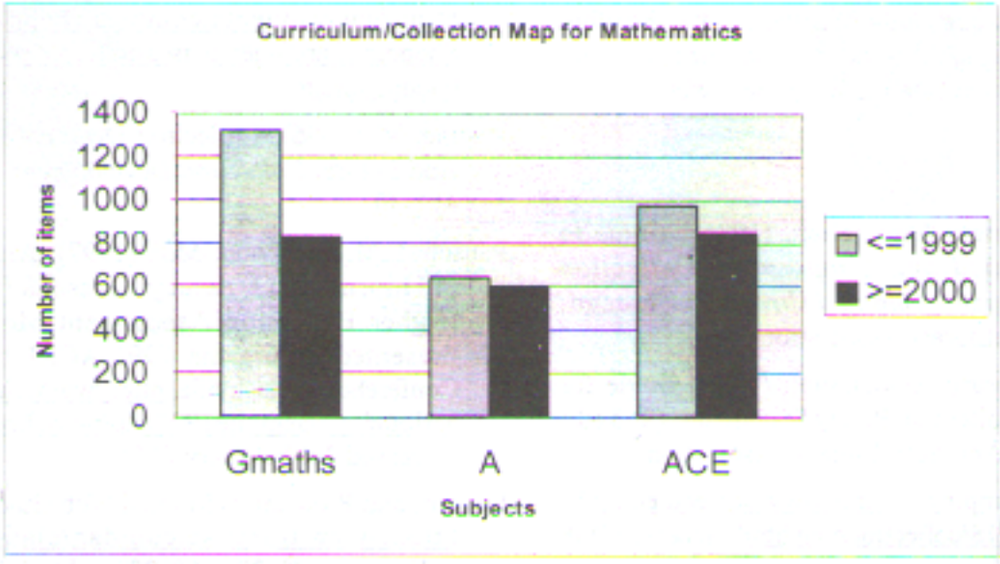

Figure 2: ***Curriculum and collection map for mathematics***

Conclusion

is primarily to ensure that customers' needs are met as much as possible. A high rate of failure to find relevant information at the appropriate level should be an indication of the mismatch in the process of selection to satisfy the curricula. However, there are many ways of accomplishing a higher customer satisfaction rate. The technique adopted at the UBL is one of such ways. The outputs of this exercise have proved very valuable for the University of Botswana Library as a marketing tool to the stakeholders.

Recommendations

Since many university libraries may not be using the innovative interface library package, it is advised that the library investigates how their system can be used to achieve the same purpose as described in this paper. The authors are aware that some libraries may not have been automated. Such libraries could physically count materials in order to achieve the same result. However, the limitation to this method is the continued circulation of materials. It is therefore best done during vacation period when the circulation of materials is expected to be at the lowest.

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EDWARD LUMANDE

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Towards A Reading Culture for Uganda

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Abstract

To access information and information materials, readers need to be literate about their reading needs. This requires a creative reading culture within the society. Although there are demonstrated efforts by the government and civil society organisations to ensure quality education, there is a lack of co-ordinating strategy targeted at building a culture of reading among the Ugandan population. The problem is how to make the present efforts and opportunities available to potential readers to utilise information as a prerequisite for life long learning. This paper discusses the various efforts by the Uganda Library Association (ULA) in the promotion of a reading culture and explores the possible strategies to build a culture of reading for life-long learning. Qualitative data were collected through reading camps and consultative meetings with both teachers and librarians. It was observed that the culture of reading in primary schools was low. The paper stresses the need for promoting a reading culture in Uganda by providing networking and strategic alliances among the stakeholders with respect to existing facilities and efforts and by integrating them into the various strategic and educational programmes, actions and reforms for lifelong learning.

Introduction

The term 'culture' is one of the busy words in literature. Like a person, a culture is born, it grows and dies. It is a result of people's interaction with their environment. Cultures are done, practised and manifested (Nye, 2000). Culture embodies the habits and attitudes shared by a society. To develop the culture of reading in a society, it requires knowledge to utilise existing information materials and resources (literature). A reading culture involves a daily activity as essential as a habit. Developing a reading culture is an instrument for acquiring lifelong learning (Makenzi, 2004). This requires the ability to recognise, access, evaluate and utilise information in the available literature or information materials.

To access information materials, the reader needs to be literate about his/her reading needs. Literacy in this sense, according to Stanley (1972), as referred to by Hillerich (1993), is "the minimum capacity both to understand the moral implications of and to act upon the demands of competence of what a particular society defines as responsible participation of a person [in a] society." However, Ribeiro (2001) believes that literacy by itself cannot provide attitudes towards information utilisation. Attitudes towards information use relate to everyday life and affect the public. It is this attitude that needs to be exploited for the development of a reading culture in a developing country like Uganda.

For a society to develop a "reading culture", it goes through different stages. It evolves from being an information conscious society to an information literate society (Garfield, 1993). According to Garfield (1993), an information conscious society is a society in which people realise the importance of the need for information. On the other hand, Doyle

(1992), as referred to by Curtain University Library and Information Services (1995), defines information literacy as "the ability to access, evaluate, and use information from a variety of sources." That is why Kirk (1995) believes that an information literate person has the ability to locate, manage, retrieve, and decode information using a variety of forms. To this end, Garfield (1993) imagines the information society to be "when all people in all parts of a society have rapid access to information they need." Access to the information they need requires a creative reading culture.

In the African context, however, the development of a reading culture at all levels of society is the great challenge. Africa is a predominantly oral society, the education systems are examination oriented. To ensure that reading thrives in Africa, concerted efforts would be required to improve the social and reading infrastructure, promote reading across the school curriculum, and develop reading extension services (Makenzi, 2004).

The Government of Uganda has set one of its national objectives to afford every citizen equal opportunity to attain the highest standard of life possible (Uganda, 1995). However this has been characterised by very low literacy levels (65%) (Uganda Poverty Status Report, 2001). Even the literate stop reading when they finish writing their examinations; a problem that has been blamed on examination oriented system of education (Bitamazire, 2001).

The people of Uganda aspire for a literate, informed, creative and well-educated society (Uganda, 1999). Accordingly, the government *White Paper on Education* aims at eradicating illiteracy and equipping the individual learner with basic skills and knowledge (Uganda, 1992). In view of the above, the Education Strategic Investment Plan (ESIP) 1998-2003 recognises the urgent need to revitalise the quality of education services (Uganda. MOES, 1998). The Ministry of Education and Sports (MOES) has put several initiatives in place to improve the quality of education. For example, the MOES has put in place a National Textbook Policy and is now implementing the Decentralised Instructional Materials Procurement (DIMP) Programme to increase stock of textbooks and supplementary readers to schools. The MOES has attempted to provide lists of recommended textbooks, introduced textbook rental schemes in schools, classroom book boxes or library corners, and put textbooks in the hands of Children (Instructional Material Unit, 2002). In addition, MOES has drafted a school library development policy to promote the development, use and effective utilisation of library and information services for sustainable quality of education and life long learning in Uganda (MOES, 2003).

The above efforts by government in the promotion of quality education notwithstanding, there has been no improvement in the reading culture. As a result, several civil society organisations including the Uganda Library Association (ULA) have set up initiatives to promote the culture of reading. ULA in conjunction with the National Book Trust of Uganda (NABOTU) are spearheading the effort to develop a reading culture. ULA and NABOTU have been implementing the East African Book Development Association (EBDA) project with the support of Swedish International Development Agency (SIDA). The project aims at promoting, strengthening and developing a reading culture in East Africa and reviving the local publishing industry. The greatest challenges remain those of harmonising the efforts of government and civil societies to improve the quality of education. Second, the need to democratise access to reading and learning resources to develop the culture of reading for lifelong literacy. This requires a strategy to evolve the culture of reading and use of libraries as an integral part of the community values and practices. This paper describes various efforts by ULA in the promotion of a reading culture. The paper explores the possible strategies in building a culture of reading for life long learning and finally, it deduces implications for possible policy development on reading.

Research Methodology

This is a qualitative study, which reviews existing efforts on the development of a reading culture in Uganda. Empirical data were obtained through the children's reading camps and consultative meetings for teachers and librarians. Through the East African Book Development Association Project supported by SIDA and run by the National Book Trust of Uganda, ULA has participated in organising

children's reading camps (tents), organising workshops for teachers, and sensitisation of librarians.

Several children's reading camps (CRC) targeting primary schools (P/S) were organised by the Uganda Library Association. They targeted geographically or socially disadvantaged rural and urban primary schools. For every CRC, a host school was selected and at least 10 neighbouring schools were invited to attend. Each school was required to send at least 10 pupils drawn from primary three to seven while at the same time ensuring gender equality. Parents and other members of the community were invited to come along to participate and witness the event. Participating schools were required to select pupils to take part in some of the competitive activities. Teachers assisted in assessing the performance of pupils in different activities. A typical CRC would have the following activities: general reading, reading marathon, writing, story telling, poems and rhymes, quiz sessions and music. At the end of each event, participants were asked to evaluate the activities and suggest areas of improvement. Each CRC was organised by a local organising committee (LOC) composed of head teachers, teachers, management committee members, old boys of the schools, librarians in the region, centre co-ordinating tutor, and representatives of subcounty, local and district councils.

ULA members briefed local organising committees (LOCs) on activities and expectations during the preliminary visits. The LOCs carried out general publicity through churches, mosques, radios, newspapers, posters and banners. Invitation letters, fliers and brochures were sent to schools, parents, local government officials and the general public. In some areas, particularly Jinja and Lira, ULA officials were invited to address large gatherings of teachers and head teachers on the subject of libraries and reading as well as the activities of the CRC. This was intended to capture the attention of head

Table 1: List of CRCs and Number of Schools that Participated in Reading Camps

Date	District	Host Schools /Venues	Number of Schools	Students Participants	Teachers Participants
8rd- 9th June,	Bushenyi	Kabira Model	18	180	30
3rd- 4th August, 2001	Jinja	Masese P/S	20	200	30
27th August - 1st September 2001	Kampala	Constitutional Square	20	720	40
5th –6th December 2001	Arua	Adyel P/S Lira	8	80	16
1st – 2nd March 2002	Mpigi	Butauka P/s	17	180	17
7th - 8th June, 2002	Iganga	Canonibula P/S	18	193	36
30th August - 5th September, 2002	Kampala	Constitutional Square	28	568	40
10th –11th Dec. 2002	Nakasongola	Kisenyi P/S	12	120	18
4th - 5th April, 2003	Tororo	Kisoko BBS	12	131	42
27th - 28th June, 2003	Kayunga	Bishop Brown P/S	17	184	25

Source: Uganda Library Association Children's Reading Camp Activity Reports

teachers to appreciate the event and release their pupils and teachers to attend. The table shows the turnout of participants in response to the invitations. Table 1 shows the list of CRCs and the turnout.

At the end of each CRC, focus group discussions with pupils, parents, teachers, and government leaders were conducted. The discussions helped to establish what participants had learnt during the camp, the weaknesses, and suggested strategies for the development of a reading culture. In all camps, emphasis was made to involve stakeholders concerned with education policy formulation and implementation at different levels.

Separate consultative meetings for teachers and librarians were conducted. The selection of teachers to participate in meetings was based on schools that had benefited from the book donation extended by NABOTU through the Public Libraries Board now the National Library of Uganda. Also included were teachers from schools that participated in CRCs. The librarians' consultative meeting had 76 librarians selected from schools, public libraries, university libraries and library and information science educators. The consultative meetings aimed at developing strategies of nurturing readership amongst children and the general public.

Government and political leaders were an integral part of the activities mentioned above. Their involvement was crucial to the process of formulating a policy on books and reading promotion. They included government ministers, cultural leaders, local government officials, opinion leaders and civil servants.

Findings

The findings are discussed under (i) activities in the children's reading camp (ii) teachers consultative meetings (iii) librarians consultative meeting (iv) political and government involvement and (v) strategies for the promotion of reading culture.

Activities in the Children's Reading Camp

The activities of the children's reading camp included open reading, browsing through books and other materials, group reading, reading marathons, writing, painting, quiz sessions, story telling, poetry and music. Assessment guides were prepared and handed out to teachers who helped in examining the performance of pupils in different activities. For example, in marathon reading, fluency, tone, pronunciation, pitch, audience control, eye contact, body language, pause and pace, volume and speed were considered to be some of the indicators to observe when selecting the best candidates. At the end of the each camp, children were requested to comment on the activities. Table 2 shows the ranking of the activities of the children.

Table 2: Children's Rating of Activities in the Children's Reading Camp

Activity	Painting	Writing Reading	General Contest	Reading	Quiz	Story Telling	Games	Singing	Eating
Lira	3	6	1	5	4	2	8	7	9
Iganga	5	7	3	2			1	6	4
Jinja	2	6	3	5	1	4	7	8	9
Bushenyi	2	6	3	1	4	8	9	5	7
Mpigi	5	3	2	6	1	9	8	7	4
Nakasongora	3	2	5	6	1	4	9	8	7
Kayunga	6	5	1	3	7	4	9	8	2
Tororo	5	4	2	3	6	1	8	9	7

Source: Uganda Library Association Children's Reading Camp Activity Reports

reading camps from only 8 camps. From the table below, it is clear that quizzes ranked best in Jinja, Mpigi, and Nakasongora. In Lira, the quiz could not rank the best as they thought the question for quizzes were few. Although reading in Lira ranked best, participants wanted more of the books in local languages. General reading was generally ranked among the best activities as most of the children had a chance to hold a book and read. This explains the use of open access to books.

In all the camps, participants expressed what they had gained. From the camps, pupils expressed that they had a chance to express themselves before others, learnt how to answer questions, new reading methods, self-expression and confidence, teamwork, and learning sharing and making new friends. Teachers freely interacted with colleagues from other schools and appreciated new ways of how to organise similar events in their respective schools. However, in Lira (Adyeli P/S), participants observed that two days were not sufficient for them to have fully enjoyed the books and all the activities.

Teachers Consultative Meetings

Two consultative meetings were held with teachers. The meetings focused on the role of libraries in the promotion and sustainability of a reading culture. It was observed that most head teachers had no knowledge about the role of libraries in the promotion of a reading culture. Teachers acknowledged government efforts through the Universal Primary Education (UPE) programme in buying books. However, it was the teachers' concern that in many places (schools) books were kept in stores with no space for children to freely access them. According to the teachers, there was a need to sensitise government to make provisions for a library when constructing classroom blocks. It was also noted that lack of books in local languages has contributed to a poor reading culture in the schools. Teachers also observed that there was no guideline on how to use of books including book handling.

Librarians Consultative Meeting

Through group discussions with the librarians, many observations showed specific actions that librarians were urged to undertake in order to improve their services. Librarians were concerned about absence of libraries in most of the schools, and noted that in many cases schools did not have an extra room for reading purposes. It was observed that although the government encouraged the teaching of local languages in lower primary school, no policy guidelines were available in terms of literature to publish, and even then there were no teachers on local languages. Participants emphasised the need for librarians to attract potential readers and constantly assess readers' needs in order to retain them. According to librarians, there was a need to develop reading efforts to target mothers and promote books in the homes to develop the culture of reading.

Political and Government Involvement

In all the camps held, various political and government leaders at various levels were invited to participate in various activities. These leaders were based at subcounty/local council, district/local council and national levels. During the reading camps, teachers and librarians' consultative meetings, the political and government leaders were requested to give their observations on the development of reading culture in Uganda. The following common comments were made by the leaders. These were: the pledge to support projects that target to educate the community about reading, to support the idea of holding reading camps in schools and donation of books to the hosting schools, and the active support of parents in the education of their children.

Strategies for Promoting Reading Culture

In order to develop strategies for a reading culture, participants were requested to provide a common way forward for the development of a reading culture in Uganda. Participants made the following observations, which are key to any policy aimed at sustaining a reading culture.

(a) *Holding Reading Competitions and Events.* Majority of the participants in CRCs and at teachers meetings expressed the need for holding similar events in their schools. For example, in Tororo, participants observed that they would love to take part in a similar event in the future.

(b) *Provision of Funding and Support.* It was suggested that government should include a budget for libraries and at the same time schools should budget for library services.

(c) *Improvement in the Management of School Libraries.* Camp participants observed a lack of libraries that would sustain the culture of reading in schools. For example, in Mpigi and Jinja, they requested for the provision of libraries for all schools. It was also observed that there was limited access to books in most schools because teachers seemed more protective of books for fear of loss and mutilation (destruction). As a result, in Tororo, children called on their head teachers to make more books available to them where books were normally kept in head teacher's offices. Teachers suggested the establishment of library committees in schools to co-ordinate the activities of reading in the schools. However, it was clear that schools need guidelines for establishing libraries. Teachers suggested the inclusion of library and reading lessons on the school timetable. It was suggested that ULA should follow up on the school library development policy to be put in place by the MOES. It was also suggested that the government should implement the UNESCO/IFLA School Library manifesto that urges countries to put in place school library policies.

(d) *Coordination and Partnership.* In majority of the places, the hosting schools were asked to continue working as co-ordinating centres for reading activities. For example, in Tororo, the hosting school was given the overall responsibility of ensuring that reading clubs, in schools work. The full involvement of head teachers and head teachers' association was observed as a requirement in the promotion of a reading culture. For example, in Jinja, the head teacher of the host school promised to bring it as an agenda in the head teachers' association meetings.

(e) *Training and Sensitisation of Stakeholders.* From the consultative meetings of the teachers, there was a need for more workshops involving teachers and similar workshops to be organised up-country. It was felt that teachers needed to be trained to teach people to read. The government was requested to regularise the positions of librarians to be employed by the MOES in school libraries.

Conclusion

The findings above show a clear expression of the desire to develop a culture of reading in real practice. However, the actions of government and civil society have left a lot of gaps which need to be filled. Part of the most outstanding challenge is the low penetration level of libraries into the community. Although the lack of library reading materials is contributing to a poor reading culture, there is still inappropriate usage of the existing reading materials in schools. The absence of a policy on reading and books has contributed to the low levels of reading habits in the country. Over the years, the government education policy has more or less emphasised and advocated greater access to books and libraries. However, the experience obtained from the reading camps and meetings show a lack of accessibility to books in schools. Where the books have been provided, no appropriate policy is in place on how it should be used. Those schools with books lack places or libraries for easy access to the books. The attempt by government to put in place policies for the purchase of textbooks, reference books, provision of book lists, the rental scheme and putting textbooks in the hands of children seems to have missed the strategy for the development of a reading culture. Some of the attempts by government show a high commitment by government in buying books but without a sustainability strategy to develop a reading culture. Although there is an attempt to put in place a school library development policy, no indication is made on its appropriate attention and government commitment.

There is no policy that guides the development of a reading culture in Uganda. Although the government has a vision of developing literacy in the country, little attempt is put on how to go about the development of a reading culture in the country. There are significant efforts by civil society such as the CRCs, training of teachers and sensitisation of librarians and involvement of political leaders; however there is no strategy in place to integrate these efforts to promote the culture of reading in the country Accordingly, it is clear that with the

government support of the current initiatives and activities, improving reading habits among children and integrating parents and teachers' role in the development of strategies would improve the culture of reading.

Recommendations

The development of a reading culture in schools requires stakeholders' commitment and support to improve the management of school libraries and holding of reading activities that will promote reading habits among pupils. To exploit existing efforts and opportunities, it requires reforms in the education sector that take advantage of the coordination and partnerships efforts, training and sensitisation strategies to advocate for a culture of reading in the country. It is implied that to champion the promotion of the reading culture, it requires networking and strategic alliances among stakeholders to utilise existing facilities and efforts and integrate them in the various strategic and educational programmes, actions and reforms for lifelong learning.

There is need for networking the efforts of children, teachers, parents and librarians to understand and address children's reading needs in the country. Where available, library staff should be champions in this move since they are central to the development of reading habits. Holistic responsibility and collaboration among the stakeholders (schools, libraries, head teachers, class teachers, parents, etc.) is a fundamental factor in the development of a reading culture in the country.

There is need to promote, amongst other matters, advocacy for libraries to develop a reading nation. As a country, there is need for developing strategies for " reading the future". It does not pay to have policies, which do not work. There is need for putting policies into practice. This requires practical ways of development. For example, schools should have policies to force (motivate) students to visit libraries as a matter of routine. This may be mandatory for particular class.

Lastly, there is a need for harmonising the education system with the demands of society. This requires the national planning authority to take a lead in developing strategies for the country. The role based approach should be balanced with the need based approach. For stakeholders to take on their roles, it requires an understanding of the needs of the society and the child for which the habits are being developed. It is hoped that the proposed school library development policy, if adopted in the MOES agenda would stir the way forward for the development of reading culture in the country.

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Potential for Utilisation of Information and Communication Technology (ICT)) in Integrated Pest Management (IPM) in Tanzania

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Abstract

Among the factors reported to have limited the implementation of Integrated Pest Management (IPM) as a full pest management strategy in Tanzania is lack of information on the pests, their ecology, and subsequent control practices. The problem is compounded further by lack of reliable means of communication. Different information delivery methods have been used in the past with varying successes. Currently, the use of information and communication technology (ICT) offers a good promise for improving information delivery to farmers in the future. This paper examines the potential of utilisation of ICT in IPM in Tanzania

Introduction

Agriculture is the backbone of Tanzania's economy. On average, agriculture contributes some 60% to the country's economy, with 80% of agricultural output being produced by smallholder farmers (FAO, 1993). However, food crop production in Tanzania is not satisfactory due to various factors including pests. Pesticides have been used as a major tool of pest control for many years. It was not until Carson (1962) published a book entitled *The Silent Spring* that many became enlightened on the environmental hazards caused by pesticide use. The concerns about the effects of pesticides on the environment and human health as well as the high monetary costs incurred in using pesticides resulted in a shift of emphasis from pesticides to other control methods like cultural, biological and host plant resistance. Unfortunately, most of these alternative control methods are not effective when used in isolation, except in a few cases. What appears more effective is to combine these techniques in a compatible manner, and use insecticides in exceptional cases. This has led to the concept of integrated pest management (IPM). The definition of IPM has been given by FAO panel of experts (Daxl *et al.*, 1994). Generally in IPM, the various pest control techniques are combined in an integrated strategy aimed at keeping pest population levels below those causing economic damage (Sorby *et al.*, 2003).

There are many factors that could limit the implementation of IPM as a major pest control strategy. Hawcksworth and Ritchie (1993) reported problems of communication as being one of the major factors preventing access to information on research on insect systematics in tropical countries. Olaniran (1993) reported that among the problems encountered in pest management networking are insufficient and/or outdated modes of communication between pest management specialists in the developed countries and developing countries, and difficulty in translation of texts from one language to another.

More specifically, in the context of Tanzania, lack of awareness of policy and research findings at farmers' level coupled with insufficient information resources and exchange of information at all levels limits implementation of IPM programmes in Tanzania (NRI, 1994). Previous studies suggested that initiatives for overcoming the IPM constraints in Tanzania include improving access to information on farmer participatory research (NRI, 1994). Also,

a system to provide access to existing IPM information as well as networks between IPM groups within the region should be created (NRI, 1994). Computer based information systems are fast, easy to use and share and cheap to update (Miller, 1993). They are quite useful especially when they contain information relevant to a local situation. The development and utilisation of such systems is therefore important in IPM.

The Application of Information and Communication Technology (ICT) in IPM

Information and Communication Technology (ICT) refers to systems for producing, storing, sending, and retrieving digital files (Bartlett, 2002). These files can contain text, sounds and images, both still and moving (Bartlett, 2002). IPM is known to be knowledge intensive and thus, information is the key input for management practices at farm level (Bartlett, 2002; Sorby *et al*., 2003). This has necessitated the use of ICT in IPM programme i.e IPM informatics. Bajwa and Kogan (2001) defined IPM informatics as computer applications in integrated pest management. IPM informatics encompasses computer-based storage, retrieval, sharing and optimal use of pest management data, information and knowledge for problem solving and decision-making (Bajwa and Kogan, 2001), The goal of IPM informatics is to coalesce data, knowledge and the necessary tools to apply that data and knowledge in decision making process, at the time and place that a decision needs to be made (Bajwa and Kogan, 2001). The uses of ICT in context of IPM programmes include support for pest management decision-making and support for IPM training (Bartlett, 2002). The development and use of databases and knowledge based systems in IPM is therefore important. Knowledge based systems are programs that store, process and disseminate knowledge (Mumford and Norton, 1993). These include Decision Support Systems (DSS) and Expert Systems (ES).

Databases, Decision Support Systems (DSS) and Expert Systems (ES) in Agriculture and IPM

Knight and Day (1993) defined a database as a large collection of related data organised for a particular use. Databases have been useful in agriculture and pest management programmes. Different databases have been developed in different parts of the world for different purposes. Examples of databases used in pest management include the *Crop Protection Compendium* developed by the Commonwealth Agricultural Bureau International (CABI) (2004). The compendium contains information on different types of pests of crops. Databases have also been incorporated into forecasting system. A good example is the *Wormbase,* which is used in army worm forecasting in Kenya and Tanzania (Knight and Day, 1993). The Integrated Pest Management Database (IPMDBASE) is another example that contains data on insect pests on four crops grown in Tanzania (Mwatawala, 1998). Databases are now the fundamental part of many computer information systems like expert systems and websites. The use of databases in IPM programmes cannot be under emphasised.

A Decision Support System (DSS) is an information system that helps humans make decisions about a given problem, under given circumstances and constraints. (Kasabov, 2002). DSS integrates user-friendly front end to often-complex models, knowledge bases, expert systems and database technologies (Coulson *et al*., 1987; Jones, 1989). Several Internet-based DSS have been developed for medicine, business, agriculture, etc. (Bajwa and Kogan, 2001; Rao, 1999). Web-based models and DSS are becoming more popular because little or no client software is required, thus reducing software management and distribution costs (Power and Kaparthi, 1998). Because of this, DSS has been of great importance in agriculture and pest management decision making. DSS is an important component of IPM informatics (Bajwa and Kogan, 2001). Generally, an IPM DSS should provide users with all the necessary information, including pest identification/ disease diagnosis, pest life histories, sampling and decision making criteria, sampling threshold calculators, pest development models linked to weather networks, biorational pest control methods plus currently available pesticides and environmental impacts (Bajwa and Kogan, 2001).

Expert Systems have been defined by Mumford and Norton (1993) as programs that mimic the process employed by human expert in diagnosing

problem and giving advice. Robinson (1996) defined ES as computer programs that attempt to emulate human expertise as a method of solving specific problems. Many factors such as population dynamics, weather, cost, pesticide susceptibility and the environment must often be considered in order to reach optimal decisions (Robinson, 1996). The application of ES technology in agricultural science is widespread (Robinson, 1996). ES in agriculture help people to make decisions about complex agricultural resource systems more effectively and timely. Without this system, many people, often without the desired level of experience or expertise, are forced to make decisions using incomplete information (Robinson, 1996). These systems provide farmers and researchers with integrated pest management strategies which include all relevant factors in order to adequately and cost-effectively control the pest. Expert Systems are usually computer-based (FAO, 2003), although for practical implementation in developing countries, it is often more appropriate to develop expert systems on a computer, and then transfer it to a paper or manual format (Mumford and Norton, 1993). Expert systems need to be developed in local languages which will help farmers to develop their own expertise, which in turn will enhance the productivity of agriculture (Rao, 1999). Examples of ES that have been developed for use in agriculture and pest control include DIARES IPM with a diagnostic advisory rule-based expert systems for integrated pest management in Solanaceous cropping systems (Mahaman et al., 2003).

Potential for Use of IPM-Informatics Product in Agricultural Extension Services in Rural Tanzania

Information exchange by electronic means has revitalised the role of extension services in providing information, education, and decision-making assistance to agricultural producers (Bajwa and Kogan, 2001). Cooperative extension services in various countries have developed electronic information systems (Rao, 1999; Bajwa and Kogan, 2001). The impact of modern technology on extension information and communication has been anticipated over a decade ago. However no one may have predicted the opportunities that have been opened with the advent of the Internet and the web. Web-based information systems and databases are now becoming essential information delivery/exchange tools for cooperative extension services. These resources are freely accessible to users, whether a producer, a professional consultant or an extension worker. Online databases increase the ability of an extension professional to provide the latest information to the local public. In addition, they enable extension workers to keep in touch with the technological advancement in areas inside and outside their personal expertise. An Internet-based network provides one virtual platform for a decentralised organisation like the cooperative extension service with its personnel and operation spread all over its jurisdiction by bridging the distance gap and operation unit). The use of ICT could complement the conventional extension methods in Tanzania. A survey has indicated that most radio and television stations (except Radio Tanzania Dar Es Salaam) have no regular programmes on agriculture. Most newspapers and magazines have no regular columns for agriculture. Most of the newspapers and magazines registered for circulation in rural areas are now defunct. This shows a great potential for ICT as an alternative means of information provision in rural areas, and more specifically on IPM. According to Munyua (2000b), traditional media have been used successfully in developing countries and radio has played a major role in delivering agricultural messages. Among traditional methods used to speed up flow of information into rural areas are print, video, television, meetings and demonstrations. New ICTs have the potential of getting vast amount of information to rural populations in a more timely, comprehensive and cost -effective manner, and could be used together with traditional media. Many African countries have embarked on projects of using ICT in providing information to rural populations.

Status of ICT in IPM in Tanzania

Before a country can utilise ICT in IPM effectively a strong policy framework is needed. Fortunately, Tanzania has an ICT policy. According to the policy, the government shall encourage, promote and support the implementation of nation wide ICT systems for

rural development activities, including agriculture, horticulture and livestock (URT, 2003). Such government commitment is a strong boost for other organisations and donors interested in providing information on agriculture and IPM to the rural people. The policy also asserts that the government shall support the local content aimed at enhancing the understanding of prevailing topical issues (URT, 2003). This could be a morale booster for local professionals interested in developing programmes in agriculture and IPM. The policy clearly provides great potential for the utilisation of ICT for IPM in rural Tanzania.

This means the use of ICT in agriculture has to focus on rural communities where majority of Tanzanians live and are engaged in agriculture. In order to reach these people, proper infrastructure e.g computers, has to be in place. At present, the Commission for Science and Technology (COSTECH) in collaboration with other agencies like the United Nations Education Science and Culture Organisation (UNESCO) have established community-based telecentres in some villages in Tanzania. The telecentres have been built in the districts of Sengerema (Mwanza), Ngara (Kagera), Kasulu (Kigoma), Lugoba (Coast region) and Dakawa village (Morogoro region). The telecentres provide services like computer training, Internet and secretarial services while in the future they will provide telephone and fax services. Among the users in these centres are agricultural officers and farmers. There is no doubt that the success of this initiative and its expansion to other villages will have a great impact on agriculture and IPM. If farmers are to become experts, then the staff who advise and train farmers need to have more knowledge and skills than was required under earlier extension systems (Bartlett, 2002).

Another important factor is the availability of computer-based programs on IPM. There are computer programs on entomology and insect pest management in some libraries in Tanzania. They are mostly databases on pests. They include the *Ento Doc* and the *Crop Protection Compendium* (CABI, 2004). The Ento Doc is an encyclopedic computer program on insect pests of sugar cane and food crops in Africa. It has a pin pointing system that aids in the diagnosis of symptoms of damage due to insect pests. The *Crop Protection Compendium* is a searchable database on agricultural pests. It has features like identification keys and pest risk analysis system. These programs might not be directly useful to farmers in rural Tanzania for some reasons. First of all, the information is more useful to researchers and students than farmers. Second is the use of English language which the majority of farmers in Tanzania do not understand. Third, the proposed control options might not be compatible with the social settings in rural Tanzania. At present, the only computer IPM database developed in Tanzania, containing IPM programs implemented locally is IPMDBASE (Mwatawala, 1998). The database was developed in English language, which could be the immediate limitation on its use in rural areas. Also, the database might not be up to date as it has not been updated since 1998. On the Internet side, there is only one website with IPM pages. The site belongs to the Ministry of Agriculture and Food Security (MAFS). The MAFS website also has IPM booklets for tomato, brassica and coffee in pdf format for people to download. The booklets have been written in the *Kiswahili* language and contain information on IPM techniques developed or tested with the participation of farmers in Tanzania. Local scientists, researchers and institutions need to develop programs and websites on IPM in local languages, and ensure compatibility with the social settings of rural Tanzania.

Computer literacy could be the main limiting factor on the use of ICT in providing information on IPM to farmers in rural Tanzania. The other problem is language, because most programmes are developed abroad and the language used is English. Most Tanzanian farmers speak *Kiswahili*. To alleviate the problem, extension agents could be trained in using computers. If possible, courses on computers and information technology should be introduced in the agricultural training institutes in the country. The graduates from these institutions will help farmers in their own working areas. It could take years but finally the majority would be able to use ICT in IPM in rural areas. Also, the programs should be developed in *Kiswahili* language and the content should be local and compatible with the social settings of rural Tanzania

How Libraries and Information Centres can Assist Farmers in using ICT

The current research-extension-farmer linkage can be strengthened with the use of ICT in IPM in Tanzania. This is because they open another avenue of information to extension agents and farmers. Libraries and information centres can help farmers and extension agents in various ways. The best way will be for farmers to identify pest problems and inform extension agents. The libraries and information centres, should first of all, make available as many computer programs on IPM as possible. This is because IPM is knowledge intensive. Second, they should have the skilled personnel who will assist the extension agent in searching for the relevant information. Finally, the library should assist the extension agent in printing hard copies of the relevant information obtained. This information, once translated into a user-friendly language, should then be communicated to the farmers who could use the information to solve problems. Literate farmers can also assume the role of extension agents and obtain information directly from the libraries and information centres.

Conclusion

There is a great potential for Tanzanian farmers to use ICT in IPM. There is an ICT policy, which shows strong government commitment to support ICT programmes in rural areas, as well a pilot project for the utilisation of ICT in rural areas. What is required now is the implementation of the IPM policy with emphasis on the provision of information to the majority in rural areas. The government and other agencies should help in training groups in rural areas on how to use ICT. This can be started with extension agents who could act as a bridge between farmers and electronic information sources. Later on, the training could focus on progressive farmers and other people in rural areas. The use of ICT can be introduced in primary schools in rural areas where future farmers will emerge. IPM researchers should do their best to avail their research findings and recommendations in CD ROMs and other storage media that can be easily accessed by others. They should also do their best to translate the findings into *Kiswahili* language that is understood by the majority in rural areas. Finally, the Government of Tanzania should support research in IPM especially in the development and utilisation of computer programs with local content. This will aid the removal of one of the obstacles to the implementation of IPM as a major pest control strategy.

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Setting Up and Managing ICT Laboratory in a Nigerian Library School: Ahmadu Bello University, Zaria Experience

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Abstract

This paper discusses the setting up of an ICT laboratory in a Nigerian Library School with special reference to the Department of Library and Information Science, Ahmadu Bello University, Zaria. The ICT laboratory was set up by the Emporia-Nigeria Project, an educational partnership between Emporia State University School of Library and Information Management (SLIM) in Emporia, Kansas, USA and three peer institutions in Nigeria: Bayero University, Kano, Ahmadu Bello University, Zaria, and the University of Maiduguri. The four-year project was sponsored by the Bureau for Cultural and Educational Affairs, College and University Affiliation Program of the U.S. State Department. The School of Library and Information Management of Emporia State University on its own donated computers, networking kits and provided the training for the project and training for the laboratory supervisors in the library schools both in Nigeria and at Emporia State University, USA. The paper highlights how the computers donated by the Emporia-Nigeria Project and those of the Management of Ahmadu Bello University were networked by the trained laboratory supervisor and connected to the Internet free for use by the students and staff of the Department.

Introduction

Libraries, librarians and information managers have to cope with the demands of an information society. They also need to have the knowledge, skills and tools in handling digital information to be efficient creators, collectors, consolidators and communicators of information. They must become familiar with information and communication technology (ICT) and feel comfortable both when using it themselves and when helping others to make effective use of it. The emergence of powerful technologies, vast amounts of information in multimedia and other digital formats and more technologically talented users means that librarians and information managers are faced with the great challenge of dealing with this information revolution. Library schools must respond to this development in order to train future librarians and information managers that will remain relevant and important to the society they aim to serve. Hence the need to review the curricula of the library schools to reflect ICT related competences through the establishment of an ICT laboratory for practical experience. Though a communiqué urging the Federal Government of Nigeria to provide ICT facilities in the library schools was arrived at the 10th Biennial Conference of National Association of Library

Science Educators (NALISE) held at Ibadan in 1999 little or nothing had been done by the government. Prior to the Emporia-Nigeria project, no library school in Nigeria had a well-equipped ICT laboratory.

The Emporia-Nigeria Project

The Emporia-Nigeria Project is an educational partnership between Emporia State University's School of Library and Information Management (SLIM) in Emporia, Kansas, USA and three peer institutions in Nigeria namely; Bayero University, Kano, Ahmadu Bello University, Zaria, and the University of Maiduguri. The project was funded by a three-year grant awarded by the US State Department to Prof. John Agada of Emporia State University School of Library and Information Management who wrote the grant proposal on behalf of Emporia State University. The grant was originally scheduled to end in June 2003 but was extended by one year. The School of Library and Information Management of Emporia State University, as its contribution to the project, donated eight fairly used computers, two laptops, eight port hubs, networking cables, networking kits and provided the human resources for the project.

The objectives of the affiliation programme include:

- the establishment of communication and telecommunication infrastructures for learning by students and for teaching and research by the teaching staff
- Provision of opportunity for the teaching staff to expand their knowledge and skills in community analysis, information and computer literacy and global studies for the Nigerian partners.

The project took off in July 2001 with the visit of the team of scholars led by the Project Director, Prof. John Agada, Prof. Martha Hale and an MLS student Brandon Barnertt, all of the School of Library and Information Management, Emporia State University, Kansas State USA, and the Nigerian Coordinator Prof. Matthew Ajibero of Bayero University, Kano, to the Department of Library and Information Science, ABU. Zaria. This article discusses how the ICT laboratory in the Department of Library and Information Science of Ahmadu Bello University was set up, how it is being managed and its benefits to the students and staff in the acquisition of ICT skills.

ICT Status of Ahmadu Bello University

Ahmadu Bello University (ABU), Zaria was established in 1962, and it is one of the first generation universities in Nigeria. ABU is one of the largest universities in the country with about 1300 academic staff of various ranks and fields of specialties who are involved in teaching and research. There are 12 faculties and 77 departments in ABU. The faculties are: Administration, Agriculture, Arts, Education, Engineering, Environmental Design, Law, Medicine, Pharmaceutical Sciences, Science, Social Sciences and Veterinary Medicine. The Department of Library and Information Science is in the Faculty of Education.

In the first quarter of the year 2001 the ABU management established its first Internet café in the Faculty of Environmental Design with 15 workstations. Because it was situated at the main campus, the Faculty of Environmental Design café provides Internet services to the following Faculties: Arts, Education, Engineering, Environmental Design, Medicine, Pharmaceutical Sciences, Science, Social Sciences and Veterinary Medicine.

In September 2001 two other Internet cafés, at Kongo Campus and at the Institute of Agricultural Research were established. Each of these cafes had 15 workstations. The university cafes provide a dial-up internet service for N300.00 (US$ 2.50) per hour. The café at Kongo Campus provides Internet services for Faculties of Administration and Law, while the one situated at the Institute of Agricultural Research provides services for the Faculty of Agriculture and two research institutes. Access was provided on a self-service basis assisted by the network assistants if need be. As a result of the high demand for Internet services, individual and business organisations have established about four different Internet cafes both within and outside the University community on commercial basis.

Prior to the establishment of these cafés, the National Universities Commission Network (NUNet) provided only e-mail services for the university community at subsidised fees. Iya Abubakar Computer Centre, owned by Ahmadu Bello University, provided the computing need for the

community with the exception of Internet services. The centre had about 40 computers on a local area network. Work has reached an advance stage for the campus area network and the installation of a VSAT for the provision of Internet services to the University community.

Setting up the ICT for Department of Library and Information Science

The Department of Library and Information Science is one of the oldest library schools in the country. It has a current population of about 350 undergraduate students and 9 teaching staff.

Prior to the donation of four computers, a printer, eight port hub, and network cables by the Emporia-Nigeria Project in May 2002, the department had only two computers in a small room used as the computer laboratory. The size of the room made it almost impossible to have practical sessions for the students considering that class size ranged from 60 - 120. As a result of his commitment to the Emporia-Nigeria Project, the Vice-Chancellor, awarded the contract for the expansion (the merging of two offices) and furnishing of the laboratory to accommodate 20 workstations. The Vice-Chancellor also promised to donate more computers to the department.

The Laboratory Supervisor is a graduate of Mathematics and Computer Science with an A+ Certification and a lecturer in the department, who also had been actively involved in running the Environmental Design Internet cafe. With the acquired skills from the training conducted on computer maintenance by Widernet Project in 2001 and the practical experience from the University café, the laboratory supervisor was able to set up the four computers donated by the Emporia-Nigeria project, install windows 98, reconfigured and installed all the necessary software required in the department. He also carried out simple maintenance. For some months, the computers were used as stand alone because the laboratory supervisor, as at that time, lacked the skills to network them.

The Network/Internet Implementations

With the purchase of a new Pentium IV computer by the department to be used as the server, the laboratory supervisor sought the assistance of an expert in networking to network the seven computers in the laboratory using the hub and cables provided by the Emporia-Nigeria Project. The major obstacle encountered while networking was a faulty network card of one of the computers, which was eventually replaced. The practical experiences acquired during the networking provided the laboratory supervisor the necessary practical skills to troubleshoot and maintain the network thereafter.

The Emporia-Nigeria Project also provided a grant of about $6,000 for the years 2002 and 2003 for the maintenance of the telecommunication and computers in the laboratory. With this fund, the department was able to repair the telephone line and pay for Internet subscription with an ISP in Kaduna. The connection was shared to all the systems using analog proxy server and IP addresses were allocated to the computers using windows 98. A software called Net-Time (Server and Client) for easy administration of the Network was installed on the systems.

In September 2003, the University provided nine new Pentium III computers, two printers (Laser Jet 1000 and Deskjet), 16 port hub and a roll of CAT-5 networking cable, which were given to the department, at about the same time the Emporia-Nigeria Project donated four additional fairly used computers, two fairly used laptops and a network kit to the department. With these additional computers, the department's LAN was expanded to 20 computers. This involved making CAT 5 cables with RJ-45 connectors and connecting the 16 port hub to the eight port hub. The operating systems of all the computers were also upgraded from windows 98 to windows 2000 professional and Windows 2000 server for the server. The printers were configured as network printers in the laboratory. The laboratory supervisor alone did all this with the acquired skills during the training at ESU. The Internet connection to the laboratory is a dial-up system; hence only 10 computers were reconfigured and connected to the Internet, because for more than 10 computers, the speed becomes unbearably slow. Once the University management connects the Department to its V-SAT, the rest of the computers would be reconfigured to browse the Internet.

Training for the Laboratory Supervisor

For effective management and use of the laboratory set up, the Emporia-Nigeria Project engaged in the training of the laboratory supervisor, both in Nigeria and at ESU, USA. During the visit of the team from ESU in July 2001, training on Internet search and website development was conducted by Brandon Barnertt for the staff of the department and a theoretical overview of networking/Internet was presented by Darriell who accompanied the team from USA. The training on networking was theoretical because as at that time not more than one computer was available to carry out any practical sessions. These training sessions were conducted alongside some series of seminars presented by Prof. John Agada and Prof. Martha Hale.

In September 2003, the laboratory supervisor with his colleagues participated in a one-month exchange programme to Emporia State University, Kansas, USA to undergo special training in ICT laboratory management. Practical training on hardware maintenance, network configuration and making CAT 5 network cables with RJ-45 connectors, setting up a server using windows 2000 and troubleshooting of network were also conducted for the laboratory supervisor. Networking kits for making CAT 5 network cables was bought for the Department. The aim was to facilitate the expansion of LAN, troubleshooting and maintaining the computer laboratory at a minimal cost when the need arises. These acquired skills have been put into use to expand the department's LAN, upgrade the operating systems, and reconfigure the Internet connection.

Training on electronic database search, two different on-line instructional software (Blackboard and WebCT) and website design were also conducted for the laboratory supervisor and his colleagues. With the acquired skills, a website for the department (// nigeria.emporia.edu) was designed and uploaded to SLIM web server.

Internet Training for Staff and Students of the Department

Almost all the students of the department lacked adequate Internet skills; hence the department decided that some basic Internet training be conducted for the students. It was practically impossible for the laboratory supervisor to effectively train all the students of the department. A training the trainer method was adopted to train some of the final year students and some from other levels who will in turn train other students.

The laboratory supervisor organised a two-week long training programme for the 81 final year students. The final year students were considered first because they already had some basic computer knowledge, having taken courses in *Introduction to Operating Systems*, and *Introduction to Computer Application Package*. The Internet training basically centred on

- Concepts of networking
- How to share hard drive and folders
- How to access files from other computers on the network
- Concepts of Internet
- How to use the explorer
- E-mailing
- Sending and downloading e-mail attachments
- How to use Internet Search Tool (search engines, meta search tools, subject directory).
- Referencing Internet Resources

Training sessions were also held by the laboratory supervisor for the academic staff of the department on effective Internet use. The training and retraining of both staff and students has been an ongoing activity in the department.

Use of the Departmental ICT Laboratory

With the establishment of the ICT laboratory, the department started the second semester of 2001/2002 in May 2002 with seven functioning computers in the laboratory. This led to the review of some of the courses and the introduction of practical sessions to support the classroom teaching. Some of the affected courses were:

- LIBS 217:Computers in Information Work,.

- LIBS 212: Introduction to Operating Systems
- LIBS 218: Media Services in Library and Information Centres
- LIBS 320:Application Package
- LIBS 420: Introduction to Digital System & Services in Libraries.

Some courses required the students to carry out individual assignment on the computer, which formed part of their continuous assessment. The laboratory was opened from 8.00am to 6.00pm to the University community but priority was given to the staff and students of the department. With a population of 350 and the 21 computers available, the department decided that a maximum of 30 minutes per student for first year to third year students, and one hour for the final year (fourth year) students daily based on first come, first served basis. A log book was provided in the laboratory for students to sign-in and sign-out whenever they were to use the computers. This was to keep a check on the use of the laboratory. For a practical demonstration session, the class was divided into smaller groups and attended to in groups.

The Derived Benefits

All the students of the department had e-mail addresses that they now use for electronic communication. The Internet now became a major source of information for the students of the department, as many were seen sourcing for information for their assignments and projects. Specifically, some lecturers gave them assignments that compelled them to use the Internet. An average of about 35 people used the laboratory daily.

Staff of the department now spent time in the Internet café searching for relevant materials for their research work, conference papers, journal publication and relevant materials for their teaching as well as using e-mail to communicate with other professional colleagues. Other users of the department's Internet café were the postgraduate students of the department. The computer laboratory was also used for administrative work of the department ranging from typesetting of the two departmental journals, typing and printing of all official documents and the processing of examination papers and admission lists. Articles for the departmental journals were sometime submitted via the e-mail as attachment.

Management of the Departmental ICT Laboratory

The department did not have a permanent staff to run the ICT laboratory. The use of the laboratory was free based on the recommendation of the Emporia-Nigeria Project. Thus, hiring someone as laboratory attendant was not possible due to lack of funds. The laboratory supervisor served as the laboratory attendant, and was in charge of the maintenance of the computers, etc. It was practically impossible for the laboratory supervisor to be in the laboratory from 8.00am to 6.00pm daily. The department therefore engaged students in the running of the café as laboratory attendants. These students had basic computer skills and volunteers applied through the Library and Information Science Students Association. The laboratory supervisor and the executive committee of the students association conducted interviews for them. The laboratory supervisor devoted more time in training this set of students on how to log on the network, connect to the Internet and how to use the Internet explorer and Net-Time software, as well as scan diskettes for viruses.

The first set of ten students worked for two months after which other students were given the opportunity. Two students worked in a day, the first from 8.00am to 1.00pm and the next from 1.00 p.m. to 6.00pm. Each student was only allowed to work for five hours a week for the period of two months. This was to ensure that their laboratory service did not affect their academic work. Beyond 6.00 pm and at weekends, any lecturer willing to work in the laboratory took charge of the laboratory and was free to allow students use the laboratory. The laboratory supervisor and other staff of the department closely monitored the activities of the laboratory attendants.

For proper use of the laboratory, the department set out some basic guidelines, which include:

- Access to the Internet in the laboratory free of charge to encourage as many staff and students to use the laboratory.

- All diskettes must be scanned for virus before use in the laboratory.
- The laboratory attendants could only give limited assistance and not available to undertake Internet searches for users.
- Access was provided on a 'self-service' basis.
- Access to pornographic sites was prohibited.
- Eating and drinking was not allowed in the laboratory.
- Playing of music, games and watching of movies were not allowed in the laboratory.

The laboratory attendants were assigned the following responsibilities:

- To put on the server and log other systems to the network
- Start the Net Time and allocate time to students
- Ensure orderliness in the laboratory (not more than two people on a computer)
- Ensure that no other person used the server
- Ensure that all users signed the log book before use
- Ensure that all students were given equal opportunity in the use of the laboratory
- Report any problems to the laboratory supervisor immediately
- Ensure proper shutting down of all the systems
- Ensure that the rules of the laboratory were strictly adhered to.

During the one month period when the laboratory supervisor was away to USA, the students ran the laboratory without any problem.

University Management Contribution to the Emporia-Nigeria Project

The University Administration has shown a lot of commitment to the success of the project. Despite the current financial difficulties experienced by all the federal universities, the administration had spent close to one million naira (₦1,000,000.00) on the expansion and furnishing of the ICT laboratory and over one million naira on the provision of nine new Pentium III, printers and their accessories. To further show his commitment to the project, the Vice-Chancellor personally commissioned the laboratory in August 2003.

Problems and Prospects

The major challenge encountered in the setting up of the laboratory at the initial stage was lack of technical skills to network the computers in the first semester (May – October 2002). This made things a bit difficult for the students and lecturers, as it was impossible to share hard drive and other resources within the laboratory. Students were therefore confined to using a particular computer where their work was saved. Due to the frequent power surge and power failure, four of the computers developed faults. Three of the computers had their power pack burnt and the other two had their hard disk crashed, leaving only two functioning computers at the end of October 2002. These faults would have been prevented if an Uninterrupted Power Supply and Power surge were provided for each of the computers. Similarly, due to the frequent power failures, the students were not able to maximise the use of the laboratory. Before the next academic session 2002/2003 which started in June 2003, the department was able to effect the repair of the computers with the funds provided by the Emporia-Nigeria Project. Efforts are under way to provide the laboratory with an electricity generator.

The frequent breakdown of the telephone system is another major impediment to the Internet services. It is hoped that with the V-SAT connectivity of the university, these problems would be overcome.

On numerous occasions, the laboratory supervisor had to format and reconfigure the hard disk after backing up the necessary information as a result of virus attack. Despite the laboratory policy that no diskettes should be brought into the laboratory without first scanning them, virus still found its way into the laboratory.

Prior to the exchange visit in September 2003, the operating system used in the laboratory was Windows 98 and this made it possible for the students to change the setting of the computer always, hence creating problems as the systems would no longer

function properly. During the training at Emporia, it was advised that the operating systems should be upgraded to Window 2000 which has facilities to prevent any unauthorised changing of the settings.

Holding any computer practical session was very difficult then, as the students had to crowd over the lecturer to see the computer screen despite the fact that the class was always divided into small groups for such exercises. The department plans to own a multimedia projector.

Conclusion

With the facilities and training provided by the Emporia-Nigeria Project and the University management, the laboratory supervisor was able to set up and maintain the ICT laboratory in-house. Apart from the initial cost of material used, money was not spent in contracting the job. Simple maintenance of the computer was also carried out by the laboratory supervisor, except for the repair of monitors and power pack that got burnt.

The Emporia-Nigeria Project helped the department to provide the students, some of whom have never used a computer before, the opportunity to be computer literate. The enthusiasm to be computer and Internet literate could be seen from the influx of an average of 35 students to the laboratory daily.

These facilities provided with the assistance of the Emporia-Nigeria Project went a long way in enabling the department to graduate computer literate and information and communication technology literate librarians and information managers as well as making staff members more computer and ICT literate.

Recommendations for Sustainability of the Project

Part of the activities that were put in place for the sustainability of the Emporia-Nigeria Project included the training of staff of the department both at the United States and Nigeria. For the ICT laboratory, a training the trainer approach was adopted, where the laboratory supervisor was trained and he in turn, trained both staff and students of the department. Some of the students were engaged in the training of their colleagues. The training is going to be a continuous process so that as the students graduate there will be some that can still assist in the running of the laboratory. It is important to note that the original proposal for the project included training on grant proposal writing for the lecturers of the Department of Library and Information Science, but time did not permit and, also, the University Management requested to make a commitment in funding the ICT laboratory and subsequently integrating it into the wider campus network which the university did.

One other major step taken by the project for the sustainability of the computer laboratory was its contribution to the review of the curriculum to reflect information technology and computer courses. This made the computer laboratory an integral part of the various degree programmes in the department which has also attracted additional funds from the University management under the teaching equipment maintenance fund. The department also decided to raise money for the continuous maintenance of the laboratory, Internet subscription and payment of phone bills by conducting training sessions for staff members of the University community at a subsidised rate. The training is to focus mainly on introduction to the Internet, effective Internet search and use of e-mail. The first training session was conducted for 10 people and the department was able to make some profit.

A project of this magnitude cannot be successful without the commitment of the management of the two institutions and staff of the Department. The Management of Emporia State University School of Library and Information Management and the Project Director demonstrated this by providing the computers, training and finance for the project. The University management of Ahmadu Bello University showed its commitment by providing the space for the laboratory and, subsequently, more computers to complement the donations made by the project. With the frequent power failure, it was necessary for the university management to provide a stand-by generator for the computer laboratory. The sponsoring partners demanded that quarterly progress report be written and financial report of the funds provided. Thus, it was imperative that timely reports be submitted as at when due to promote continued funding. For effective teaching of computer courses

for a large class, there is a need for a digital projector.

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The Integration of Print and Electronic Sources: A Case Study of the University of Swaziland Library

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Abstract

This is a case study in which the objectives were to assess user involvement in print/ electronic resources (e-resources), integration, education and training, awareness, use and impact of e-resources at the University of Swaziland. Based on a questionnaire survey from a sample of first, final year and a mixed group of students, the results showed that users were not involved, user education inadequately covered e-resources, and users were not fully aware of and underutilised e-resources which consequently had a limited impact. The study recommends user requirements studies, comprehensive user education catering for varying student needs, installation of more computer terminals as well as user friendly access policies, aggressive marketing of e-resources and improvements in ICT infrastructure.

Introduction

Located in the Kingdom of Swaziland, Southern Africa, the University of Swaziland Library (UNISWA) comprises three campus units, Kwaluseni, Luyengo and Mbabane. Its mission is to efficiently provide services and access to quality academic information resources, irrespective of format and location, to University staff, students and associates in support of instruction, learning, research and administrative functions (University of Swaziland Library, 2000). With a total professional staff strength of 13, the library serves over 4,000 users (University of Swaziland, 2001). Up to 1998, the information resources available were predominantly print and services largely manual.

In many ways, 1998 was a watershed in the development of UNISWA library services. After a six-year delay caused by lack of funding, October 1998 saw the purchase and installation of computers and the URICA automated library system and Internet connectivity <http://library.uniswa.sz>, first at Kwaluseni Campus, followed by Luyengo. In the same year, staff training and work on the URICA modules commenced. The uploading of bibliographic records from the Southern African Bibliographic Network (SABINET) eased retrospective conversion and gave users online access to information on library holdings within a short space of time. At Luyengo, user access to automated and Internet services was hampered by delays in the installation of the data line connecting Luyengo Campus to Kwaluseni (which was completed only in 2000), shortages of computer terminals, equipment break downs, and library extension work (which was finished in 2001). Mbabane Campus remained unconnected.

In the same year, 1998, print holdings stood at 159, 837 monograph volumes and over 1, 500 journal titles and serial publications (University of Swaziland, 1998). Annual expenditure on monographs was E412,145 (US$66, 475) and on journal subscriptions it was E1,017,673(US$164,140) giving a total of E1,429,818 (US$230,615). Over expenditure amounted to E469,818 (US$75,777), which precipitated the streamlining of journal subscriptions.

From a managerial viewpoint, the foregoing

resulted in considerable progress in the integration of print and electronic resources and services, characterised by the following:

- 40 PCs and access to ca52 CD-ROM and EBSCO Host Internet subscription-based full text databases and free web resources and services.
- Over 225,000 print monographs and a reduced 300 journal title subscription.
- Improved availability of IT skills due to training and development, and use of IT biased staff recruitment, selection and appointment criteria.
- Related University-wide IT infrastructure comprising a computer laboratory with 55 PCs used for conducting computer courses, typing assignments, and E-mail and Internet services.

Connel and Franklin (1994), McClure (1994), Wolpert (1998) and Koenig (2001) conclude that the successful provision of integrated library and information resources and services is, inter alia, anchored on two critical factors, namely: (i) user input, and (ii) user education and training. Yet, in the documentation on UNISWA experiences, financial, managerial and technical factors preponderate. Not much is reported about the user factor and the impact of the management-driven integration initiatives in addressing user needs.

The objectives of this study were to:

(i) examine the extent of user involvement in the design, integration and provision of electronic information services,

(ii) assess user education and training in the use of electronic resources and services,

(iii) gain insight into the extent of use and awareness of electronic resources as well as the impact thereof,

(iv) determine the balance in the use of print and electronic resources, and

(v) recommend improvements to the provision of integrated library services at UNISWA.

Methodology

The survey universe comprised 2,263 students enrolled in the Faculties of Commerce, Education, Humanities, Science and Social Science at the Kwaluseni Campus in 2002. Due to resource constraints, a manageable sample of 420 students was selected for the study. The sample composition was determined as follows:

(i) four volunteer students randomly approached and identified a group of 41 willing student participants who were mainly in their second, third and fourth year of study (volunteers),

(ii) first year class of 72 Commerce students had been with UNISWA for seven months and was completing the library user education component of the *Academic Communication Skills* course, and a fifth and final year class of 106 Humanities students who were commencing the post-graduate certificate in education (PGCE) programme, and

(iii) a mixed group of 201 student names randomly selected from the 2001/2002 enrolment lists covering first to fifth years.

The rationale behind the three-pronged approach was:

(i) to increase the chances of obtaining focused responses and more data credibility by engaging a cross section of willing/volunteer students who demonstrated interest in the survey,

(ii) to minimise the chances of bias either towards the experiences of the least exposed first year students or the most exposed final year students (who enrolled at the time service integration was introduced and therefore had grown with it) by including samples from both extremes, and

(iii) to ensure that the study sample was fairly robust and sufficiently representative of the survey population by including a mixed group from the moderately exposed second, third and fourth year students, in addition to the volunteer students. Luyengo and

Mbabane students were excluded because of the campuses' late and bumpy integration experiences and lack of exposure to electronic resources, respectively.

A questionnaire was designed to seek data on respondents' background, user involvement, education and training, use and awareness of electronic resources, balance in the use of print and electronic resources and the impact of electronic services. Between January 20th and February 20th, 2002, 420 copies of the questionnaire were physically distributed to the volunteer participants and first and final year students, and e-mailed to the mixed student group comprising the sample. A total of 167 completed copies of the questionnaire were received, as detailed in Table 1.

Out of a possible 420 responses, a total of 167 copies were completed representing 39.7 %per cent. This study was largely based on the data received from the volunteers, first and final year students. The two e-mailed responses from the mixed students group were added to the volunteer responses. Supplementary data used for this study came from the UNISWA library Home page, annual reports and the University calendar. Also, informal discussions were conducted unobtrusively with students and UNISWA staff. To the extent that the study sample included a fairly representative spectrum of the student population, the survey yielded enough baseline data on the integration of print and electronic sources at UNISWA.

Table 1: Response Rate

Sample Category	Copies Distributed	Copies Returned	Response Rate (%)
Volunteers	41	21	58.5
First Year Students	72	54	75
Final Year Students	106	90	84.9
Mixed Group	201	2	1.0
TOTAL	420	167	39.7

N=420

Results

The results will be discussed under five sections: background information, user involvement, user education and training, use and awareness of electronic sources and services and balance of use print and electronic services.

Background Information

The questionnaire requested respondents to give information on their age (optional), degree programmes and prior computer training. The responses show that the average age of the volunteers was 21, first year students was 22 while that of the final year student was 25. Generally all respondents were young. The average age across the three respondent categories was 23 years.

Majority of the respondents were pursuing Bachelor of Arts (Humanities) [93 (55.7 percent)], Bachelor of Commerce [62 (37.1 per cent)], Bachelor of Science [7 (4.2 per cent)], Bachelor of Social Science [3 (1.8 per cent)] and Bachelor of Education [2 (1.2 per cent)] degree programmes. The first years were pursuing commercial studies, final years were mainly from the humanities, and the volunteers were from the science and social sciences.

Of the 167 respondents, 120 (71.8%) lacked training in the use of computers, while 16 (10%) volunteers, 10 (6.0%) first years and 10 (6.0%) final years had trained at introductory level, most of them by taking the University's *Introduction to Computing* course offered in the first year of study. (The basic skills/knowledge was in word processing, database management, spreadsheets, E-mail and

Internet searching.) Four (2.4%) respondents had either informally trained themselves or relied on friends to acquire basic word processing skills. Notwithstanding the relatively improved availability of computers at Kwaluseni campus since 1998, a fairly large number [74 (46.3 per cent)] of final year students remained untrained.

User Involvement

Respondents were asked, "What would you say has been your involvement in the design and provision of library computer/Internet based services?" Virtually all respondents answered "none". Two responses vividly illustrate the extent of non-involvement. One first year respondent stated: "It has been far too little ... I am ignorant"; the other volunteer student answered: "None, our help was not requested otherwise it would have been happily given." To this extent, library electronic services at UNISWA were a result of management perceptions about user needs and specific user input was lacking.

User Education and Training

The library offered a user education programme to students in their first year of study and, on a selective basis, to those researching for their final year dissertations. Respondents were asked to evaluate the programme and the results are collated in Table 2.

Majority of the respondents rated print sources higher than Internet sources and CD-ROM databases.

Use and Awareness of Electronic Resources and Services

The questions focused on awareness and use of

(i) Internet resources, and

(ii) The library website

(iii) frequency of use of electronic resources and services and

Table 2: Library Training Evaluation

Resources	Rating			Total responses
	Good	Fair	Poor	
Internet resources	55 (32.9%)	35 (25 %)	50 (35.7 %)	140
CD-ROM databases	59 (46.4%)	24 (19 %)	44 (34.6 %)	127
Print resources	136 (88.3%)	14 (9.1 %)	4 (2.6 %)	154

Table 3: Internet Use Experience of Respondents

Years of Experience	Respondent Category			Total No. of Respondents
	Volunteers	First Year	Final Year	
None	0	30 (55.6%)	54 (62.1%)	84 (51.9%)
Under 1 year	1 (4.8%)	8 (14.8%)	1 (1.2%)	10 (6.2%)
1-2 years	5 (23.8 %)	16 (29.6%)	16 (18.4%)	37 (22.8%)
3-4 years	13 (61.9 %)	0	11 (12.6%)	24 (14.8%)
5+ years	2 (9.5%)	0	5 (5.8%)	7 (4.3%)
Total	21	54	87	162 (100%)

N=162

(iv) frequency of CD-ROM searches:

Internet Resources and Services

Respondents were asked to indicate the number of years that they had used the Internet. Table 3 summarises the situation for all the respondents.

Only two (9.5%) volunteers and five (23.8% per cent) final year students had five years experience. At the other extreme, 30 (55.6%) first year students and 54 (62.1%) final year respondents had no Internet experience. Interestingly, an equal number [16 (18.4%)] of first and final year students reported 1-2 years Internet experience. Overall, respondents had limited experience to exploit optimally Internet resources and services. When respondents were asked to rate themselves on a scale ranging from: cannot use at all, beginner, average and expert. Table 4 above summarises the results.

Table 4: Internet Ability of Respondents

Internet Ability	Respondent Category			Total No. of Respondents
	Volunteers	First Year	Final Year	
Unable	2 (8.6%)	19 (35.8%)	52 (58.4%)	73 (44.2%)
Beginner	7 (30.4%)	27 (50.9%)	18 (20.2%)	52 (31.5%)
Average	13 (56.5%)	7 (13.2%)	18 (20.2%)	38 (23%)
Expert	1 (4.3%)	0	1 (1.1%)	2 (1.2%)
Total	23	53	89	165

N=165

On average, of the 165 who responded to the question, 73 (44.2 per cent) could not use the Internet at all. A surprising 58.4% of the final year students who had been using the library since the introduction of the Internet on computer were unable to use the Internet.

Use of UNISWA Library Website

Respondents were further asked to specifically state their likes and dislikes with respect to the UNISWA Library Web site. Of the 70 (42 per cent) respondents who expressed their likes, particularly in respect of the online public access catalogue (OPAC), 23 (33 per cent) cited ease of access. Other cited likes included: availability of circulation status and location information, comprehensiveness, reliability, time saving, accuracy, multiple search options, user friendliness, links to other resources and relevance of contents. Of the 62 (37 per cent) respondents who expressed their dislikes, the most of the respondents 13 (21 per cent) cited computer down time, followed by insufficient terminals 10 (16 per cent). Other dislikes included: lack of updates, unavailability of call numbers for some OPAC records, usage difficulties, uninformative links, unreliability, slowness, lack of links to other university library catalogs, lack of SiSwati (national language of Swaziland) search terms, lack of discipline-based browsing structures, and poor staff assistance. On balance, the more than 50 per cent of respondents who could not indicate their likes or dislikes about the UNISWA Library Web site suggested a limited awareness of the resources accessible there from.

Frequency of Use of Electronic Resources and Services

A related question seeking information on the frequency of use of select Internet databases such as EBSCO Host and the UNISWA Web OPAC; search engines such as Yahoo, Google and Alta Vista; Listservs; Web browsers such as Internet Explorer and Netscape; and e-mail services, was posed. On

Table 5: Frequency of Use of Select Internet Resources and ServicesFrequency Resources/Services

	Online databases	Search engines	Listservs	Web browsers	E-mail
Everyday	6 (4.9 %)	9 (5.9 %)	1 (1. 7 %)	9 (6. 1 %)	27 (25 %)
2 or 3 times a week	11 (8.9 %)	8 (5.3 %)	0	8 (5. 4 %)	16 (15 %)
Every week	8 (6.5 %)	9 (5.9 %)	4 (6. 7 %)	6 (4. 1 %)	8 (7. 4 %)
2 or 3 times a month	18 (14.6 %)	9 (5.9 %)	2 (3. 3 %)	11 (7. 5 %)	4 (3. 7 %)
Once a month	22 (17.9 %)	18 (11.8 %)	1 (1. 7 %)	19 (12. 9 %)	11 (10 %)
Never use	58 (47.2%)	100 (65.4 %)	52 (86. 7 %)	94 (63. 9 %)	42 (38.9 %)
TOTAL	123	153	60	147	108

Table 6: Frequency of CD-ROM Database Searches

Frequency	Respondent Category			Total No. of Respondents
	Volunteers	First Year	Final Year	
Everyday	0	0	0	0
2 or 3 times a week	0	0	0	0
Every week	1 (4.3%)	1 (1.9%)	0	2 (1.2%)
2 or 3 times a month	0	1 (1.9)	0	1 (0.6%)
Once a month	1 (4.3%)	0	3 (3.5%)	4 (2.5%)
Never use	21 (91.3%)	52 (96.3 %)	82 (96.5%)	155 (95.7%)
Total	23	54	85	162

N=162

a scale ranging from no use, once a month, and two or three times a month, to once a week, two or three times a week, and almost every day, the responses are as summarised in Table 5.

The majority of respondents did not use online databases, search engines, listservs, Web browsers and E-mail. While the number of 27 (25 %) respondents using e-mail every day appears to suggest that it was a popular service, but it belies the reality of the higher number of 42 (38.9 %) non-users, mostly first and final year students. It is noteworthy that final year students comprised (i) 50 of the 58 (86.2 %) who did not use databases; (ii) 53 of the 100 (53 %) who did not use search engines; and (iii) 54 of the 94 (57.4 %) who did not use Web browsers.

Frequency of CD-ROM Searches

Respondents were asked to indicate the frequency of use of CD-ROM database information searches, the results of which are shown in Table 6.

Of the total of 162 who responded to this question, the majority of 21 (91.3%) volunteer respondents, 52 (96.3 %) first year students and 82 (96.5%) final year students reported never using CD-ROM databases. Of the few students that searched CD-ROM databases, they cited the following, in rank order, *Arts and Humanities Citation Index, ERIC, Agris, CAB Abstracts and Sociological Abstracts*, out of a total of 52 accessible databases at UNISWA.

Overall, 155 (95.7 per cent) of the respondents did not access CD-ROM databases and categorically professed their lack of knowledge about this technology. The small number of users expressed appreciation of the comprehensiveness, browsability, ease of access and currency of CD-ROM databases, but were disgruntled by insufficient search terminals and technical complexity of the technology and, therefore, the recurring need for assistance.

Balance in Use of Print and Electronic Resources

Respondents were asked to indicate, in rank order, their use preferences from a selection of print materials, CD-ROM and Internet databases and resources, and audio-visuals (regardless of whether subscription-based, freely available or donated) the results are shown in Table 7.

Most of the respondents 144 (92.9%) gave first preference to print materials, 40 (28 per cent) of these respondents clearly stated that they used only this format. Audio-visuals were the second preferred choice for 46 (43. 4 %) of the respondents. There was an equal number of respondents [40 (42.6 per cent)] who indicated that Internet resources were their second and third choices. An overwhelming 84 (94.4 per cent) of the respondents indicated that CD-ROM databases would be their last resort.

Conclusion and Recommendations

The findings of this study have revealed that the students were not involved in the project for the integration of print and electronic sources, hence the low usage of electronic sources by students. Adequate arrangement in terms of the participation and training of students was not made before embarking on the project, thus students were not able to exploit to the fullest the potentials of using electronic resources for academic purposes.

In order to maximise the benefits of print and electronic resources integration, it is recommended that the library should:

(i) develop and further strengthen collaborative partnerships with the various faculties and the Information and Communication Technology Centre to ensure that all first year students are provided with basic computer skills in their first semester in readiness for their academic, information literacy and lifelong learning programmes,

(ii) conduct user requirement studies to ensure

Table 7: Resource/Service Preferences

Preferences	Resource Formats			
	Print materials	CD-ROM databases	Internet databases	Audio-visuals
1st Preference	144 (93 %)	0	14 (14. 8 %)	4 (3. 8 %)
2nd Preference	7 (4. 5 %)	5 (5. 6 %)	40 (42. 6 %)	46 (43. 4 %)
3rd Preference	4 (2.5%)	84 (94.4%)	40 (42.6%)	56 (52.8%)
Total	155 (100 %)	89 (100 %)	94 (100 %)	106 (100 %)

user input in the provision of electronic resources,

(iii) continuously educate and train staff to enable them to offer a comprehensive user education programme that applies innovative information technology supported training methodologies and versatile delivery tools to equip users with the essential skills to access and use electronic resources. Additionally, the user education programme should comprise different content levels to cater for the needs of both inexperienced and experienced users as they progress through the various stages of the degree programmes,

(iv) procure and install more computer terminals as well as allow generous time quotas to enable effective Internet and CD-ROM databases searches,

(v) aggressively market electronic resources as an indispensable complement to print and audio-visual materials across all levels of the university community, and

(vi) persistently lobby for improvements to the information and communication technology infrastructure on campus.

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The Management of Chieftaincy Records in Ghana: An Overview

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Abstract

In many developing countries like Ghana, the chieftaincy institution serves both administrative and advisory role to the government in community affairs. Using data obtained through a survey, the study examined the management of chieftaincy records in Ghana. The study revealed that chieftaincy records serve as source material for both traditional administration and research. However, requests for records as research material tilt towards land administration and the history of the chieftaincy stools and land. The study concludes with recommendations on how to ensure effective management of chieftaincy records for both current and future use.

Introduction

The chieftaincy institution is an important element in the political, religious, and economic and social life of the people of Ghana. The institution has played an important role in the governance of the society in the past and continues to do so in the present. This importance is manifested in the recognition given the institution by both past and present governments from the colonial to the republican era.

To ensure that the institution continues to play its role in the changing economic and social order, the government, through the Chieftaincy Act of 1971, established offices for some recognised traditional councils in 1973. The offices were to ensure the effective management of the traditional areas by providing the necessary administrative support in the form of personnel, records management and other facilities.

The chieftaincy institution in Ghana plays administrative, judicial and advisory roles to government on traditional affairs. This is done through the traditional councils, the regional and national houses of chiefs. The chiefs perform these functions through the standing, research, stool, land and boundary committees. These activities generate valuable records, both active and inactive, which in recent times have not received the attention commensurate with their value.

Section 55, subsection 3 of the Chieftaincy Act (1971) enjoins all registries of the various houses of chiefs to keep minutes of the proceedings of the house and to take custody of all records and other documents of the house.

The Chieftaincy Institution in Ghana

In 1958, the Legislative Assembly passed the House of Chiefs Act which confirmed that traditional councils and the houses of chiefs could resolve disputes among traditional rulers. After Ghana became independent in 1957, the first Chieftaincy Act was passed in 1961 defining who qualified to be called a chief and the requirement for recognition as a chief by the minister responsible for local government. This Act continued the process began by the colonial government in reducing the powers of the traditional rulers (Nsarko, 1975). In 1969 the new constitution established a National House of Chiefs (NHC), which consisted of elected representatives from the regional houses of chiefs

(RHC). It has its headquarters in Kumasi. Nevertheless, the members agreed in 1978 to hold meetings in the other regional capitals on rotational basis. The regional houses of chiefs have their headquarters in the various regional capitals. The national and regional houses of chiefs have elected presidents and vice-presidents. Structurally, the paramount chiefs head the traditional councils as presidents. The other members of the councils are the divisional and sub-divisional chiefs. The registrars are assisted by a number of subordinate staff to ensure the day-to-day administration of the traditional area. Each traditional council is expected to have a registrar, an assistant registrar, a clerk, a bailiff, a typist and a messenger or cleaner.

It has been observed that even after independence, successive governments of Ghana have retained the power to determine whether a traditional ruler, elected by his own people according to their traditional rules, should be recognised (Arhin, 1985). In the Chieftaincy Act of 1971, Cap 370 part 48, a chief or traditional ruler has been redefined as:

> an individual, who has, in accordance with customary law, been nominated, elected and installed as a chief or as the case may be appointed and installed as such and whose name for the time being appears as a chief on the national register of chiefs.

This Act, which was a follow-up to the 1961 Act, ensured that before anyone performed any duties as a chief, he receives the recognition of the government. The Act grouped the chiefs into four categories. The first were the paramount chiefs, followed by the divisional chiefs, then the sub-chiefs and finally all other chiefs not falling within any of the preceding categories.

The 1992 Constitution guaranteed the chieftaincy institution through Article 270, which ensured the continued existence of the National House of Chiefs. Membership of the NHC is made up of five elected paramount chiefs from each regional house of chiefs. In the event of a region having fewer than five paramount chiefs, divisional chiefs could be elected to make up for the shortfall. The functions of the NHC are to:

(i) Advise government on matters relating to or affecting chieftaincy;

(ii) Undertake the progressive study, interpretation and codification of customary law with a view to evolving, in appropriate cases, a unified system of rules of customary law, and compiling the customary laws and lines of succession applicable to each stool or kin;

(iii) undertake an evaluation of traditional customs and usages with a view to eliminating those customs that are outmoded and socially harmful.

Besides these functions, the NHC also has an appellate jurisdiction in any case or matter affecting chieftaincy which has been determined by the regional houses of chiefs in the regions. The RHCs also have original and appellate jurisdiction in cases determined by the traditional councils. The 1992 Constitution introduced a new element, which is the recognition given to Queen mothers as traditional rulers.

Records and Archives Administration in Ghana

Records keeping in Ghana was given a major boost when in 1946, the National Archives was set up to manage government records with the passage of the Public Archives Ordinance of 1955 and the first professional archivist appointed (Akita, 1995). However, the role assigned to the National Archives, according to Akussah (1994), implied that it had been given the responsibility for the management of the second and third phases of the life cycle of public records. Since the Ordinance was silent on the institutional responsibility of the first phase (current) of public records, it left a vacuum between government offices and the private sector, parastatals and the traditional authorities. This has led to the amendment of the Ordinance and passage of the Public Records and Archives Administration Department (PRAAD) Act of 1997, Act 535, to address the shortcomings of the Ordinance.

Statement of the Problem

With the creation of chieftaincy records, the question of their management to ensure their preservation and easy retrieval for users arose. The Public Archives

Ordinance did not offer a legal or structural framework within which the traditional authorities could fall back for professional guidance and assistance, whilst the Public Records and Archives Administration Department Act (PRAAD) which had replaced the Ordinance was yet to have the expected impact on the proper management of the records. This had resulted in the situation where the staff in these offices relied on their own initiatives to manage their records. Most files had their folders torn and a number of documents were becoming brittle. The very old handwritten documents were fading and could be lost. Maps and photographs of past chiefs and special events were falling into pieces, bleached and mouldering due to lack of proper care and preservation facilities. No retention schedules had been prepared to cover the records, thus all records irrespective of their value were kept. Hence this study sought to examine how chieftaincy records could be better maintained and preserved by the traditional councils through modern methods of records management.

Methodology

The major consideration in social science research is to obtain adequate information that will allow accurate descriptions of situations or relationships between variables. Survey methods involving a questionnaire, interviews and on site inspection and examination of facilities and documents were used in this study. The study was carried out in January 2004.

According to Busha and Harter (1980), a population is any set of persons or objects that possesses at least one common characteristic. In this study, the population was made up of two categories.

(i) Administrative staff of the traditional councils' offices;

(ii) Users, made up of the staff- (whilst the records were active) and researchers.

Ghana is divided into ten regions which could be grouped into north and south, and one region each purposively selected from the north and south. Greater Accra Region was selected for the South and Ashanti Region for the North on the basis that they have traditional councils that are both metropolitan and rural in land area, have had long contacts with the colonial government, and are highly documented.

The study sample comprised of all the seven (7) traditional councils in the Greater Accra Region. In the Ashanti Region, using random sampling, seven (7) out of the 21 traditional councils were selected. The interview schedule was designed to elicit information on such issues as the staffing, accommodation, equipment and facilities and funding. The other issues investigated were the requisition of records by staff users, types of records created, access to and exploitation of records, and the retention, disposition and preservation of records. The questionnaire for non-staff users focused on services provided by the offices. In this study, some of the problems hindering the effective functioning of the offices were outlined and the responses to questions posed to the staff through interviews were analysed. Members of staff who were the users of the records were also interviewed whilst copies of a mail questionnaire were administered to non-staff users whose addresses were randomly picked from a list of addresses gathered from the attendance registers at some of the offices.

In all, thirty-four (34) members of staff were interviewed in the 14 traditional council offices in the two regions. This constituted 72.3 per cent of the total staff strength of forty-seven (47) at the time of the survey. The remaining 13, which constituted 27.7 per cent of the members of staff, were messengers and cleaners who were not directly involved in the administration of the offices. The questionnaire for non-staff users was sent to ten (10) respondents, of which six (6) responded. It was realised that most of the non-staff users gave house numbers as addresses, so it was difficult to mail copies of the questionnaire to them. Others also failed to provide addresses, thus limiting the number of respondents.

Findings

Organisational Structure

At the apex of the hierarchy is the Chieftaincy Secretariat, which was established when the traditional councils were inaugurated in 1973.

Directly below the Secretariat are the National House of Chiefs, the regional houses of chiefs and finally the traditional councils. The traditional councils are on the last level of the hierarchy. Both the national and regional houses of chiefs and the traditional councils have offices headed by registrars and other subordinate staff. The administrative staff of the national, the regional houses of chiefs and the traditional councils are all employees of the central government. Members of staff may be transferred from one level to the other without loss of status. Recruitment and promotions are the responsibility of the Chieftaincy Secretariat on the recommendation of the registrars.

Staffing and Training

The staffing position in all the councils offices varied. A visit to the various offices revealed that the least number of staff found in some of the offices were three whilst the highest number was five. The total number of staff counted in the 14 offices visited was 47 and the breakdown by regions was as follows. The seven offices of the Ashanti Region had 23 members of staff representing 48.9 per cent while the seven offices of the Greater Accra Region had 24 members of staff representing 51.1 per cent of the total. Fourteen (29.8 per cent) of the staff had secondary school education, 15 (31.9 per cent) had commercial school education and 18 (38.3 per cent) had the Middle School Leaving certificate. At the time of the study only five out of the 14 offices had staff assigned the duty of managing records. Of these five members of staff only one had any form of formal training through a workshop. The rest had been learned on the job.

Office Accommodation

At the inauguration of the traditional councils in 1973, the councils were required to provide the office accommodation to facilitate their operations. Ten of the councils had offices on the premises of the paramount chiefs' palaces whilst the rest had their offices located in rented premises. Four (28.6 per cent) of the offices were housed in old mud houses which had either broken or unpaved floors, dirty unpainted walls and leaking roofs which were not sealed. The broken or unpaved floors made the offices dusty whilst the leakages in the roofs made the records mouldy. In the overcrowded intermediate storage areas, the presence of rodents was noted through their droppings. Pest infestation of the records was also observed. None of the offices had air-conditioning. Thus, there was temperature and relative humidity fluctuation. The temperatures in the offices and storage areas changed according to the seasons. All the offices had no document restoration facilities. Also absent were fire extinguishers and other fire-fighting equipment. The staff also did not have any basic fire-fighting knowledge. The offices were however safe from floods since they were located on higher grounds and not prone to floods.

Equipment and Facilities in the Offices

The government equipped each of the councils at their inauguration with some basic office equipment and furniture like writing desks and chairs, a typewriter, a metal cabinet or two wooden cupboards. The Chieftaincy Secretariat also supplied the offices with stationery. The manual typewriters supplied had, with the passage of time, become obsolete and prone to frequent breakdowns. The effect of inadequate and poor accommodation facilities, obsolete equipment and frequent shortage of stationery affected the morale and performance of staff.

One facility that facilitated effective communication was a telephone. Nine of the offices were equipped with functioning telephones. The rest did not have phones because the towns in which they were located were yet to be connected to the national telephone network. Though fire outbreaks can wreak havoc on records, there were no fire extinguishers in the offices in case of fire outbreaks.

Funding of the Traditional Councils Offices

The offices of the traditional councils were financially dependent on the government through the Chieftaincy Secretariat. The financial requirements of the offices were included in the budget estimates of the Secretariat. Funding from the government covered salaries of staff of the councils, the provision of equipment and stationery, allowances to some of the chiefs and other office expenditures. Data collected showed that besides funding from the government, some of the traditional councils offered

some kind of assistance to their offices. Whilst all the traditional councils had provided accommodation for the offices, the councils assisted nine of the fourteen offices, representing 64.3 per cent financially. They were assisted through the procurement of additional stationery such as folders, carbon papers, typing sheets and pens. The sources of funds to the councils included receipts from sand winning (Ga and Shai), royalties on stool, land, dividends earned from the councils' shares in operating rural banks, community projects and other proceeds. The remaining 5 (35.7 per cent) relied on the government for all their financial needs. Reasons given for this situation ranged from the reluctance of the councils to assist, to lack of resources to generate funds.

Types of Records Created

The offices were set up with the main objective of facilitating the smooth and effective administration of the traditional councils. This objective could be achieved by ensuring that the records generated in the course of business were well managed. The records served as sources of information to the councils, the judicial committees, researchers and other users. Records of the councils, both active and inactive, have informational, evidential and historical values, which necessitate their effective management for both current and future use. In the deliberations of the judicial committees, the offices provide information from the records of proceedings, registers to either support or reject claims especially in cases dealing with land and properties, marriage and succession. In cases of the demarcation of boundaries, the offices provide information in the form of maps and other records to assist the judicial committees in their deliberations.

The main types of records created and maintained by the various registries were as follows:

- Minute books, which cover proceedings of the standing, research, stool, land and boundary committees.
- Record books, including petition proceedings record books, appeal record books, judgment books, files, index of casebooks, exhibit books, etc;
- Case dockets, mainly on individual petitions and appeals; and
- Other records include cashbooks, receipt books, personal files, deposit registers, maps and policy files.

Access to Chieftaincy Records

Records generated by the councils in the course of business remain the property of the creating offices for their use. However, in judicial cases, the offices could be compelled to provide copies of records as sources of evidence to non-staff users whilst still active. The material most often sought were the record books. Responses to the question as to the category of users showed that chiefs, families and researchers were the main users. The chiefs consulted the records in cases dealing with chieftaincy disputes over succession to stools, in matters of enstoolment and destoolment, and disputes over land demarcation. Families and individuals also consulted the records for evidence in disputes over family lands and lines of succession to stools. Students consulted the records for academic purposes. The researchers were both foreign and local. Lawyers who handled land and stool cases also made use of the chiefs' records in litigation over land and stools.

The Ga, Ashanti Mampong and Kumasi traditional council offices had the highest number of searchers because they cover areas with many disputes over land and stools. Even though there were no restrictions generally on the chiefs' records, it was learnt that access to record books are restricted and were granted only on permission because they contained proceedings of the judicial committees. Requests for records or information were usually made in person or by mail.

Retention and Disposition

Penn et. al (1994) have observed that the main objectives of records scheduling are:

(a) the prompt disposal of records whose retention period have ended;

(b) the storage of records which must be temporarily retained after they were no

longer needed in current business; and

(c) the preservation of records which were of long-term value.

As part of the survey, respondents were asked if there was any approved authority, policy or regulation specifying retention periods and methods of destroying records. All the respondents had no knowledge of any retention and disposal schedules in their offices. To the respondents, records were either active or inactive. When active, they were stored in steel cabinets, on tables and in cupboards. When they became inactive, they were transferred to storage rooms. No differentiation was made of records of ephemeral value that needed to be kept temporarily and records of long-term value.

Preservation

A major problem identified through the analysis of data collected dealt with the preservation of records. It was observed that because the offices and storage areas were not purposefully built to cater for records, they lacked certain basic requirements. Since the offices and storage rooms were not sealed, windows and doors were always left open and besides sunlight and dust easily entered the offices. Active files in the offices were kept fairly clean through daily cleaning, but a close examination of inactive records in the intermediate storage rooms showed dusty records.

Implications of the Study

The findings showed that some of the traditional councils offices lacked good accommodation, equipment and facilities. The records also lacked professional management and direction from the PRAAD. Although the offices were established to provide efficient support services to the traditional areas, they lacked good accommodation, equipment and facilities required to be able to administer their areas efficiently. An inefficient records management system would affect the judicial functions of the traditional councils, leading to protracted adjudication of land and stool disputes. This would create disunity and conflicts leading to the under development of their areas of jurisdiction and the country as a whole. The lack of guidance by PRAAD in the management of chieftaincy records could lead to the loss of many valuable records through neglect, wilful destruction, and biological, chemical and environmental conditions. Loss of the records would be the loss of the historical and cultural heritage of the people.

Conclusion

The chieftaincy institution has existed for a long time and has played major roles in social and political administration from the colonial to post-colonial period in Ghana. It is a fact that for some time to come, chiefs and traditional authorities will remain participants in local and national government as a necessity. Most Ghanaians see the institution of chieftaincy as sacred and sacrosanct. It is seen as above reproach and cannot think of any substitutes because it is irreplaceable. Chiefs also continue to provide the basis of unity, solidarity, nationalism, and exponents of the culture and traditions of their people. They ensure law and order through the settlement of disputes, prepare agreements in respect of disposal of land, and act as the sacred and religious heads of their communities.

It is therefore necessary to ensure that the records generated as a result of their activities are managed for easy retrieval and use while current and those assessed to be of permanent value preserved for posterity. The Public Records and Archives Administration Department should therefore extend its services to cover traditional councils to ensure the effective management of their records.

Recommendations

The major objective of the study was to provide an insight into the management of chieftaincy records in Ghana with particular reference to Ashanti and the Greater Accra Regions. The study revealed some problems that inhibit the effective management of records at the traditional councils offices. The following recommendations are being made.

One problem that was mentioned frequently during the study was inadequate finance. It is therefore suggested that to reduce the financial burden on the central government and improve on services, the various traditional councils should contribute financially and materially to improve efficiency in the offices. Councils with very poor

accommodation facilities should make real effort to relocate their offices. The traditional councils can generate funds through receipts from royalties, financial contributions from companies operating within the traditional area, development levies and soliciting for assistance from citizens of the traditional area.

In the case of staffing, it is suggested that qualified staff should be employed to manage the records at the councils offices. For the existing staff, the Chieftaincy Secretariat should draw up a programme with the assistance of the PRAAD to conduct workshops and seminars in basic records management techniques. The offices need to be well equipped to function effectively. It is therefore recommended that the councils assist the offices to acquire some metal cabinets and wooden cupboards while the old ones need to be repaired. More spacious and accessible shelves should be built to facilitate easy and fast retrieval of records.

Paper-based records need to be preserved well, especially those with long-term value. Regular fumigation of the offices and storage rooms should be carried out to rid the records of insects such as termites, book worms and cockroaches that can cause extensive damage to records. The PRAAD should develop a retention schedule for records common to all the councils offices. Such a retention schedule will ensure uniformity for chieftaincy records throughout Ghana.

Records disposition may take either of two forms: destruction or transfer to a records centre or an archives for permanent preservation. Disposal of records occur in accordance with records retention schedule. To ensure an effective disposition of chieftaincy records, it is suggested that staff from PRAAD be seconded to the Chieftaincy Secretariat to assist the traditional councils to carry out the disposition of their records using the retention schedules developed as suggested above. This will ensure that only records of value are retained for further use.

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Short Communications

Towards Disaster Preparedness and Recovery Planning Procedures for Libraries: A Survey of Staff and Users of the Balme Library, University of Ghana

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Abstract

This paper presents the findings of a survey conducted on the Balme Library, University of Ghana. The survey measured such variables as the level of awareness and issues of education and training in order to underscore the relevance of having disaster recovery plans in libraries. The main findings include the presence of fire and water hazards; absence of disaster recovery plan for the library; staff and users did not have any training in the use of fire extinguisher and what to do during emergencies. The paper concludes with important suggestions for the development of disaster recovery plans for the library and other similar libraries. These include training and education of staff and users; promoting co-operation between related ministries and among similar libraries; and acquisition of some important supplies, materials and facilities.

Introduction

Libraries are subject to disasters contributing to loss of precious materials and information. Though seen by some librarians as very remote, disasters in libraries are real, and have happened since ancient times. Among the well-documented library disasters the Florence Flood- 1966; The Klein Law library, the Ghana Broadcasting Corporation Film Archives 1989 and The Trust House Fire – 1999. In addition, disasters have happened in small school libraries and series of incidents in Ghana. These destructions have caused great concern to governments all over. In 1996, an Act 517, the Ghana Government established the National Disaster Management Organisation (NADMO) to develop a framework to manage disasters. The task involves the preparation of a National Disaster Management Plan. All organisations were thus encouraged through awareness creation to have plans that could be incorporated into the National Disaster Management Plan to ensure harmony in dealing with emergency response in disasters.

The Balme Library, University of Ghana established in 1948, supports teaching, learning and research. The Library which has over 500,000 materials now serves over 19,000 studen: population and over 900 lecturers. It has a valuable information asset that requires maximum protection from any disastrous effect of floods, fires, destruction during political unrests and other deteriorations as a result of pest or mould infestations. The focus is on the Balme Library for two main reasons. The Balme Library is the largest library in the country, and has had no such study conducted on it. Besides, out of the other four public university libraries interviewed, only one had a disaster plan; one was in the planning stage whilst the other two did not have. The ratio-

nale for this study is therefore to advocate for the establishment of disaster preparedness and recovery plans for university libraries in the country.

Definition and Causes of Library Disasters

Within the library context, a disaster can be anything or an event that directly or indirectly affects the normal administration of the library, that is, the disruption of service to readers on either a short-term or a long-term basis. This may be a marked departure from the normal nature of events that are termed or described as disasters. Natural events such as earthquakes and floods are termed disasters because of the effect these have on human beings as well as their normal way of occurence. Turner (1997) argues that the classification of disasters into natural and man-made has very little importance for the identification of what actually is a disaster. To him therefore, a disaster or an event becomes a disaster only when man and the environment he has created or lived in are affected. The environment could be a whole nation, a community, a business organisation, an office setting, a museum or a library. The moment these settings are disturbed and normal services are disrupted, the situation can be termed as a disaster. To reinforce the fact that disasters are frequent in our libraries, Anderson and McIntyre (1985) describe disaster as an unexpected consequences to the holdings or materials in the custody of the librarians. It can be a small-scale incident or a full-blown emergency, but in either case it (the event/situation) requires prompt action to limit damage.

In general, both natural and man-made disasters affect libraries. Poor geographical location, other environmental phenomena prevailing outside the library, or unfavourable conditions inside the library can largely precipitate some of the emergencies such as disasters. Alegbeleye (1993) and Obokoh (1989) separately mentioned two commonly recurring causes of library disasters to be floods and fires. Harvey (1993), however, includes vandalism, theft, earthquake, insect infestation, and the effects of light and temperature among the causes of library disasters. Discussing the above definitions and prevailing conditions in and outside the libraries that militate against the effective management of libraries, one could not agree more with Harvey when he concludes, that if these are anything to go by, it means then that disaster potentials are numerous in our libraries.

This paper therefore explores the present situation regarding disaster recovery planning in the University of Ghana by using the Balme Library as the focus of the study basically because it serves one of the largest academic communities. It also acquires and provides the same services and materials as all the other university libraries do. The materials in themselves have properties that make them susceptible to some agents of disasters. Beside, the reasons stated above, Balme Library can be assumed to be a fair representation of other university libraries in Ghana. The survey, as already indicated, aims at measuring the following variables that are fundamental to disaster preparedness and recovery planning. These are: awareness of disasters, and disaster preparedness

Methodology

Two sets of questionnaires were designed and distributed to gather information from both staff and users in order to determine and measure the following major variables: awareness of disasters and disaster preparedness. Both questionnaires were administered over a period of two weeks in the library, in May 1999. The data were collected over a period of two months between May and June 1999. Although it is five years since the data were collected, the situation at the Balme Library in terms of the design of building and the collection remains unchanged.

Population and Sampling

The sample includes lecturers, students and university administrators. The library at the time of this survey catered for over 10,000 students in addition to 770 registered lecturers. In order to get a good sample of users, a daily attendance statistics was taken within one week, that is Monday to Friday. Out of the total of 2526 users in a day, a sample of 200 was taken and the questionnaire was administered. Copies of the questionnaire were distributed randomly at the various service points in the library. Out of the 200 copies of the questionnaire administered, 182 were retrieved representing 91% response rate. The inclusion of users in this study was based on the con-

viction that no disaster plan can be effective without seeking and analysing the views of users of the collection.

The total population of staff stood at 108 at the time of the data collection. Out of this number, 55 members of staff were sampled. The questionnaire administered was restricted to only the staff at their posts at the time of study. Forty-five copies of the questionnaire were retrieved representing 82% response rate.

Findings

The findings are discussed under three sections: awareness and experience of disasters, collection and storage and disaster preparedness plan.

Awareness and Experience of Disasters

In an effort to determine the levels of awareness of users and staff to disasters, questions focused on whether they had heard about disasters, if they had experienced disasters in libraries and if they thought disasters were likely to occur in the library.

In all, 82% of users had heard about disasters and this percentage also thought that disasters were likely to occur in the library. The reasons given for this were that: disasters were unpredictable, and since the library continues to use old and faulty electrical switches, the likelihood of disaster occurrence could not be easily dismissed. Conversely, 17% responded 'no', and these respondents were of the view that disasters were not likely to occur in the Balme Library as a result of the following reasons:

(i) the design and construction of the building were superb, and since there were always people around any developing disaster would be noticed and foiled;

(ii) for so many years no disaster had occurred;

(iii) disasters hardly occurred in Ghana; and

(iv) everything was in order so disasters would not occur.

The above comments are reproduced here to show how superficial or lightly people take such emergencies. It is true that Balme Library is one of the oldest and strongest buildings on the University of Ghana campus. It is also evident from the risk assessment that fire hazard exists in the library. The study found the presence of faulty switches, congested offices with exposed electrical wires, multipurpose basement which housed the main electrical distributor stored with chemical and old journals which are sure recipe for fire disasters. The presence of these in the internal environment shows that the probability of disaster is high, though the external environment may appear safe to the casual observer. It must be emphasised that disasters are unexpected events, which happen so suddenly that people are normally caught unprepared. The unexpected can happen in the night when the library is closed. So, the contention of users that people are always around and can foil any incipient disasters is most unfortunate. This answer certainly depicts how carelessly many people treat disaster issues until they have had the experience.

From the data, it is interesting to note that 30% of the readers used the library daily, while 16% visited it weekly, with 39% visiting it occasionally. This means that at any point in time, especially during the working hours, there were a sizeable number of readers in the library. In times of emergency one could imagine the number of people, both staff and users, that are likely to become potential victims. The rescue teams would have a fair idea of users that may be trapped in the library or missing after a rescue operation has been undertaken.

When staff members were asked if there was a likelihood of disaster happening in the library, 82% answered in the affirmative while 14% were in the negative however, 4% could not respond probably due to indecision. Twenty per cent of the staff indicated that they had experienced disasters in the library between the period 1989-1998, whereas 76% had never experienced disasters of any kind in the library. The main cause of disaster in the library was mentioned as roof leakages in some sections of the library. This is a confirmation of the existence of water hazards in the library. Over 30 % of the respondents were aware of a disaster plan in the library and 20 % believed the library was adequate enough to prevent a disaster from happening.

Collection and Storage

A Knowledge of the type of materials, equipment

and the environmental conditions prevailing in the library is necessary when planning for disasters. Members of staff were therefore asked questions to this effect. Ninety-eight per cent (98%) of the staff mentioned all the materials and the equipment correctly. It was revealed from the study that most of these materials were well kept as a result of the routine cleaning of the stack areas. As far as non-print materials were concerned, they were kept in good air-conditioned environments. Additionally, computer diskettes had back-up copies outside the library so that in case of fire outbreak, for example, documents would not be totally lost.

Disaster Preparedness Plan

Disaster preparedness involves awareness and knowledge of the disaster plan, the location of resources, the location and the use of vital equipment during the emergency period. In view of the above, staff were asked specifically if they knew of such a plan in the library. Only 31% of the staff said they were aware of disaster plan in the library. When staff members were asked to indicate what measures were in place to contain any emergency situation in the absence of a disaster plan, among the measures mentioned were the presence of fire extinguishers, fire alarms and disaster committees. From the answers, it could be deduced that the majority of the staff probably did not know what was available in terms of disaster preparedness plan. This is because fire alarms were not in the library, neither did the library have any disaster committee in place nor were the majority of the fire extinguishers functional.

When users were asked if they knew the location of fire extinguishers in the library, as many as 66% responded "no". This shows that though the extinguishers were available, most of the users were probably not observant or were simply not interested in them or did not know their use. However, 99% of the staff knew the location of the fire extinguishers. Sixty-seven per cent (67%) of them did not know how to operate them. This is clearly an indication of the state of unpreparedness on the part of both staff and users. In emergencies, the possibility of chaos cannot be easily dismissed. The above situation has several implications for the library and the University at large. It means that during such emergencies, about 500 users in addition to staff would either be trapped or injured depending on the type of disaster and magnitude of damage.

Conclusion

From the observations and the above findings, a number of conclusions could be drawn. It is clear that though users and staff were aware of disasters they hardly knew what to do in such situations. As a result of apparent ignorance, panic and stampede, there could be loss of life and property and subsequently, academic work would be disrupted for some time. Though water leakages had been a problem in the library close to a decade, unfortunately, measures were not in place to salvage water-damaged materials. Water disaster is a single event that could happen as a result of so many factors. Some of these are fire outbreaks, which may necessitate the use of water hose and sprinklers to quench the fire, and earthquakes, which may result in burst pipes in stack areas that could lead to flooding.

Recommendations

The library administration should bring to the notice of the Library Board the importance of having a disaster preparedness and recovery plan. If the policy is formulated and approved, then it is suggested that the library should set up a committee to draw up a disaster recovery plan for the library. As an immediate measure during working hours, all barricaded windows and exits should be opened, so that in case of any emergency, staff and users could escape easily and rescue teams could have access to operate effectively. Much mayhem is caused when accessibility to a disaster area is blocked either as a result of human traffic or the presence of heavy burglar-proof barricade. All offices should have the appropriate fire extinguishers and these should be serviced regularly. Buckets of sand should be provided in all the offices to help support the existing fire extinguishers for firefighting.

All fire exits in the library should be well marked and the keys put into the glass cases located near the exits. Since there are no fire alarms or smoke detectors, an identifiable or common procedure should

be initiated to raise alarm during emergencies. These should be incorporated in the orientation programme for all new users of the library.

All staff should be trained and shown how to operate simple fire facilities. The training should be done in conjunction with the Ghana National Fire Service. Periodic simulation exercises as well as fire drills could be undertaken to assess the readiness of the library to tackle unexpected emergencies. This should be a continuous process to ensure that new staff a re i mmediately given this training upon commencement of duty.

It is further suggested that the Library should establish healthy relationships with appropriate agencies like the National Disaster Management Organisation and the Ghana National Fire Service so that they could assist in the drawing up of such a plan for the library. This relationship is necessary so that in times of emergencies, these agencies which may be the members of the rescue team would know the floor plan of the library and the priority areas to access and the type of materials to be salvaged. It is also to aid the team to know the kind of equipment and materials to use in such situations.

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Cell Phone Use by Students at the University of Botswana: A Comparative Study of Library and Information Studies and Other Departments

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Abstract

This paper reports the results of a study that was carried out to determine patterns of cell phone use among students within the Library and Information Studies (LIS) Department and students from other departments within the Faculty of Humanities at the University of Botswana. Focus was however on LIS students and was aimed at determining whether there were salient similarities or differences in the patterns of use of cell phones. The results of the study revealed that most students owned cell phones and they used them mainly for communication purposes as well as supporting their learning activities. The results further showed that there was little difference in the pattern of use of cell phone by LIS and other students within the Faculty of Humanities.

Introduction

In 1998 two cell phone providers were licensed to operate in Botswana. This development was the result of the liberalisation of the telecommunication, sector. The enactment of a legislation in 1996 led to formation of the Botswana Telecommunication Authority to regulate the sector (Tsimane, 2000). Since 1998, Botswana has experienced great strides in cellular communication revolution with prices progressively falling and making cell phones more accessible.

By March 1998, two cell phone companies, Mascom and Orange were licensed and started operations in June of the same year. When the cell phone providers entered the market in 1998, the national fixed line teledensity stood at 7% (Tsimane, 2000). By 2001 the growth of the cell phone industry in Botswana had surpassed expectations and the national mobile teledensity stood at over 18% compared to 9% fixed line teledensity. The two service providers offer a wide range of services such as international roaming, voice mail, call forwarding and waiting, unified messaging services (UMS), fax mail, the short message service (SMS), local and international news, weather forecasts, etc. The cell phones network of the two service providers covers the entire country. The companies provide broadband services based on 900 MHz network and plans are underway to introduce the 1800 MHz network, which can accommodate more subscribers.

The cell phone industry has gained popularity among Botswana people especially the youths. By December 2001 the number of cell phone subscribers in Botswana was estimated at 314,915 compared to about 138,242 fixed lines (Gaolathe, 2002). This tremendous growth of the cell phone industry was accompanied by a decrease in prices of cell phone handsets. This made it possible for about 20% of the Botswana population, which is estimated at 1.7 million, to own cell phones by 2001. Similarly,the cell

phone has come to be associated with social class amongst students.

Students at the University of Botswana have taken advantage of the situation to own cell phones, which they use mainly for communication purposes. Until recently, students at the University of Botswana relied ostensibly on the Internet-based free e-mail services as their main means of communication. Today, the students, albeit using the Internet for communication purposes, are turning increasingly to cell phones for short message communication because this service is cheap, convenient and provides the flexibility of communicating from anywhere any time.

The Internet access to students is provided by the University, though locations to access the Internet facility are not adequate for all students and more often than not the Internet server is down. In addition, Internet penetration within Botswana is low compared to cellular phones and, thus, students find the use of the latter for communication purposes a better option. The widespread use of cell phones by students at the University of Botswana reflects the pattern of use nationwide.

In Japan's university campuses, cell-phone mania is reported to be the norm among students. Students use cell phones in class for sending e-mail messages, surfing the Web, shopping online, listening to downloaded music and watching videos. Japan is now referred to as a nation of telepaths as half the people are said to be surfing the Internet with their phones, sending e-mail, getting news and playing games. A study of 915 university students at seven universities in Japan in June 2001, revealed that 90 per cent of the students owned cell phones capable of sending and receiving e-mail messages. About 65 per cent of the students in the survey also admitted to receiving or sending at least one e-mail message during class. Thirty per cent owned up to sending or receiving as many as four messages. Several Japanese universities are now taking advantage of the ubiquity of cell phones on campuses to inform students of cancelled classes and nagging those who are behind in their tuition payments (Brender, 2001).

The Objectives of the Study

This study was motivated by the increasing use of cell phones within the University of Botswana and the extent to which they are used productively to enhance the learning process. The objectives of the study were therefore to:

1. determine the level of cell phone penetration ownership mainly among LIS students and also to a limited number of students within the Faculty of Humanities at the University of Botswana for comparative purposes.
2. examine the use of cell phones by students while on campus.
3. find out the challenges occasioned by cell phone use to students.

Methodology

This study set out to determine the comparative patterns of use of cell phones among LIS and other students within the Faculty of Humanities at the University of Botswana. The Faculty of Humanities has seven departments, namely Library and Information Studies, English, African Languages and Literature, French, Media Studies, Theology and Religious Studies and History. The study was initially designed to focus on LIS students, but was later extended on a limited scale to cover other departments within the Faculty of Humanities so that some measure of comparison could be made This explains why the LIS population was disproportionately larger than the combined populations of the other departments within the Faculty of Humanities.

The study population consisted of 208 LIS students and 2500 students from the other departments in the Faculty of Humanities at bachelors, diploma and certificate levels. The population was stratified into two, namely: LIS students and other students of the Faculty of Humanities. Within LIS stratum, the questionnaire was administered randomly to a sample of 100 students disproportionately based on the number of students in each of the programmes at the certificate, diploma, and bachelor's level during class sessions with prior arrangements with the lecturers of the sessions. Within each programme, the number of copies distributed varied from 30-40 based on the size of the classes and were given

randomly to every 5th student.

For students in other departments of the Faculty of Humanities, copies of the questionnaire were administered to those groups of students who had registered for common courses at year 1, 2, 3 and 4. A sample of 70 students was selected and copies of the questionnaire were distributed to each group disproportionately based on the population of students at each level. Within each group, the number of copies administered was between 10 and 20 based on the size of each class. Within each class, copies were given randomly to every 4th student. Lecturers were asked to assist in collecting the completed copies of the questionnaires. Disproportionate sampling was considered suitable because of the variation in the number of students studying at each level. The study made use of the departmental students' lists as sampling frame.

Findings and Discussion of the Results

From the 100 copies that were distributed to the LIS group, 60 of them were completed and returned giving a return rate of 60%. On the other hand, from the 70 copies that were distributed to the students in other departments within the Faculty of Humanities, 52 were completed and returned giving a response rate of 72.3%.

Findings from LIS

From the 60 respondents who completed and returned copies of the questionnaire, 45 (75%) were females and 15 (25%) were males. There were more females in the Department of Library and Information Studies and, therefore, this outcome did not have any gender significance in patterns of cell phone use. The findings revealed that ownership of cell phone shows that 43 or 71.6 % of the students surveyed had cell phones. The respondents were further asked whether the cell phone they owned was their first one. This was to determine how often they changed cell phones and for what reasons. Those who indicated that it was their second or third cell phone were 18 (41%). Of the 18, ten (55%) indicated that they changed for a better brand or for ease of portability. Twelve (67%) respondents indicated that they bought a second or third after losing the previous ones.

The respondents were asked to indicate what features their cell phone handsets contained. This question was asked to determine the features that students often used. The results are shown in Table 1 below.

Table 1: The Features of the Cell Phone owned by the Students

(N=43)

Responses	No. of respondents	% response
Short messa$_g$e mail system	43	100
Voice mail	43	100
Games	41	95.3
Clock facility	39	90.6
Calculator	39	90.6
E-mail facility	8	18.6

The features of the cell phones owned by students were the ones that the students made use of most. E-mail tended to be associated with top range cell phones that were expensive.

The respondents were asked to indicate what they used the cell phones for. The purpose of this question was to determine whether they used the cell phone for any academic related matters. The results are shown in Table 2 below.

Table 2: The Use to which the Cell Phone was Put

(N=43)

Responses	No. of respondents	% response
Communication purposes	40	93
Leisure	34	79
Academic purposes	18	41.8
Others	12	28

This outcome could point to the fact that though students carry the cell phones to school, the over-riding factor is not to assist them to enhance the learning process. This could also be explained by the fact that cell phones have not yet become widely used for web surfing which the students would find useful to their learning. Those students who used cell phones for academic matters indicated that cell phones enabled them to keep time, exchange messages with colleagues about assignments, keep timetables, etc.

Respondents were further asked to indicate whether the use of cell phones had changed their lives on campus in anyway. All the respondents 43(100%) indicated that cell phones had helped them to manage time, eased communication and helped them keep in touch with friends, lecturers and parents. This result showed that the cell phone was used mostly by students for communication purposes to enhance contacts, leisure schedules and academic work.

Findings from Other Departments in the Faculty of Humanities

The students were asked to indicate whether they owned cell phones. The results showed that 42 (80.8%) owned the cell phone while 10 (19.2%) did not own any cell phone. In addition, of those who owned the cell phone, 24 (46.2%) were females while 28 (53.8%) were males.

On the question of whether the cell phone they owned was their first one, 11(26.2) indicated it was their first one while 31 (78.8%) indicated that it was their second or third. The respondents who indicated that it was not their first cell phones were further asked to state what happened to their first cell phone. The answers included the fact that it was: lost, changed for a better model, it was stolen, donated to a relative, it was damaged, or simply that it was old.

On the question of what they used their cell phone for, the results are shown in table 3.

Table 3: The Use to which the Cell Phone was Put (N=42)

Responses	No. of Respondents	% Response
Communication purposes	27	47.6
Leisure	4	9.5
Academic purposes	1	2.4
Others	8	19

Respondents were asked to state how the use of cell phones had changed their lives. They stated various reasons such as: improved communication; ability to attend to urgent matters; makes one feel secure because you are always in touch with family members; and additional demands on their finances making them poor.

Respondents were asked to state the features that their cell phone had. The responses include: messaging, alarm system, calendar facility, games facility, calculator and converter, Internet, e-mail and fax.

Comparison of Cell Phone use by LIS and Students from Other Departments within the Faculty of Humanities

On the whole, the pattern of use of cell phone was not much different between the LIS students and students from other departments of the Faculty of Humanities. However, a large proportion of students from other departments in Humanities owned more cell phones than the LIS students. This could be attributed to the fact that LIS students use the Faculty computer laboratory more often than the rest of the students in the Faculty by virtue of the subjects that they pursue, which are largely IT related. As a result, the LIS students can easily gain access to the Internet for communication purposes than those from other sister departments within the Faculty.

More LIS students used cell phones than students from other departments of Humanities for academic purposes. It was difficult to explain why, but one probable reason could be that since LIS students were more inclined towards IT, they found it easier to explore various facilities provided by cell phones to enhance their academic work than the other students. This could be the same reason why

LIS students seemed to have more uses to which they put the cell phones than students from other departments. It would be of interest for further research to explore whether ICT literacy enhanced the use of cell phone for academic purposes by students.

Conclusion

The students used cell phones mostly to manage communications-such as communicating with parents, remaining in contact with colleagues, using calculator facilities, for timekeeping, etc. It was pointed out that using SMS for communication was quite cheap, faster, convenient and flexible compared, for example, to Internet e-mail where one needs to gain access from a fixed place such as a computer laboratory.

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BOOK REVIEW

The Ghana Interlibrary Lending and Document Delivery Network (GILLDDNET), by A. A. Alemna and M. Cobblah. Oxford: International Network for the Availability of Scientific Publications (INASP), 2004, 55p. (ISBN 1-902928-26-1).

This book is a useful source of information on the practices of library cooperation through interlibrary lending and documentary networks. The authors bring in their rich experiences through the presentation of historical accounts of the successes and challenges of the Ghana Interlibrary Lending and Document Delivery Network (GILLDDNET) project. The book covers largely the whole cycle of the project, that is the planning, implementation and evaluation phases. The book has six chapters.

Chapter One focuses on library cooperation in Ghana. It defines and outlines the concept of library cooperation and provides practical activities of library cooperation among university libraries in Ghana such as interlibrary lending, cooperative acquisition, cooperation through professional associations, international cooperation, exchanges, photocopying, bibliographical services and cooperative cataloguing. The chapter also highlights the problems inherent in such cooperation in Ghana. Chapter Two provides the background information as well as the role and strength of the participating libraries in this cooperation arrangement namely Balme Library, University of Ghana, Kwame Nkrumah University of Science and Technology (KNUST) Library, Cape Coast University Library, Institute for Scientific and Technological Information (INSTI), University of Education, Winneba (UEW) Library and the University for Development Studies (UDS)Library. Chapter Three present details on the planning and implementation of the GILLDDNET project focusing the aims and objectives, the technical aspects, training and overall management of the project. Chapter Four focuses on evaluation of the whole project. By specifically drawing from the eight internal and external evaluation reports, the book highlights the benefits and inherent challenges of the GILLDDNET project. The impact of the project on libraries vis-a-vis training, publicity, resource sharing, electronic networking and management are well documented. Lessons learnt from experiences of professional study tours and visits to South Africa, where similar consortia have been developed, are also drawn to the attention of the reader. Chapter Five, devoted to what next after the GILLDDNET project, focuses on the inherent benefits of the project and problems of such consortia. It also proposes the building of Consortium of Academic and Research Libraries in Ghana (CARLIGH). This chapter consolidates the issues in the other chapters and offers some recommendations which provide useful premises on which other African university libraries should be able build their own library cooperation arrangements. Chapter Six is a summative and useful conclusion to the book. It highlights the project's main challenges, commitments and main recommendations.

In this book, the theoretical and practical issues of library cooperation have been well articulated with aptness, clarity and professional aptitude. The examples have professional appeal. Also, the language used is clear. The book succeeds in its objective to inform other library and information science professionals on the subject of library cooperation in Ghana.

This book is focused and rich in practical orientation on the concept of library co-opration. The

materials used for the overall description of the structure and characteristics of library cooperation through GILLDDNET are useful to most practising librarians. It also has some pertinent theoretical underpinnings in the field of library and information science that can be useful to students and lecturers of library and information science.

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New Publications

Using Google for African Studies Research: A Guide to Effective Web Searching. Ross-Shire (Scotland): Hans Zell Publishing.

A pilot edition of this guide is now freely accessible at http://www.hanszell.co.uk/google/. It is published as an adjunct to the new third edition of *The African Studies Companion: A Guide to Information Sources* (online at http://www.africanstudiescompanion.com), although it can also be used on its own. Preceded by an examination of Google's extraordinary growth and popularity – and looking at issues such as its page-ranking methods and privacy concerns – the guide is designed to help the user get the most out of Google's Web searching techniques, and at the same time provides a critical evaluation of Google's many Web search features, services and tools. The guide is liberally interspersed with examples of searches and search strategies, relating to Africa or topics on African studies.

'The Quiet Struggle' by Paul Sturges and Richard Neill, accessible at http://www.lboro.ac.uk/departments/ls/staff/psturges.html

One of the main titles concerned with information and libraries in Africa has been out of print for some years now and never achieved full distribution in Africa because of the high price charged by the publishers. A full text of the second (1998) edition is now available electronically.

One can click on the highlighted title of the book and find a searchable and downloadable text. Librarians, lecturers, scholars and students are encouraged to use it freely, providing that if all or parts of it are re-used elsewhere, full credit is given to the authors. A CD ROM copy can be supplied on request from Paul Sturges if this will be more convenient.

Academic and Scholar Search Engines and Sources, December 2004, accessible at http://virtualprivatelibrary.blogspot.com/Scholar.pdf

Internet MiniGuide Annotated Link Compilation white paper titled "Academic and Scholar Search Engines and Sources" is a 32-page research paper listing selected resources both new and existing that will help anyone who is attempting to find academic and scholarly information and knowledge available on the Internet. Each source is described along with the URL address.

Professional News and Events

Peter Lor, New Secretary General of IFLA

The International Federation of Libraries and Institutions (IFLA) recently announced the appointment of Professor Peter Johan Lor to the position of Secretary General of IFLA. Professor Lor, until recently, was the National Librarian of the National Library of South Africa. Professor Lor was for many years professor of library and information science at the University of South Africa and the University of Pretoria, South Africa. Prof. Lor served as external examiner and consultant to many library schools in Southern Africa. He served on many committees of IFLA. He was one of the three musketeers that established the African libraries listserve based in South Africa.

Google Digital Library, Threat to Conventional Libraries?

Google recently announced the turning of library collections of leading libraries into searchable digital content. The libraries involved are the New York Public Library, libraries of Harvard University, Stanford University, the University of Oxford and the University of Michigan. Each of these libraries has a collection ranging from seven to fifteen million books.

Google will scan millions of books for inclusion in its web index. There has been a mixed reaction from the library community. While some libraries are optimistic that it will raise the profile of libraries in the age of the Internet, many are worried that it may render the conventional libraries unnecessary.

IFLA Agricultural Libraries Approved

The International Federation of Libraries and Institutions (IFLA) has recently approved Agricultural Libraries Group as one of IFLA groups. Professor Deva Reddy, one of the top agricultural librarians in USA, sent a proposal on the need to have such a group. The IFLA Professional Committee recently approved the group. It is expected that it would make its presence felt at the next World Library and Information Congress in Oslo, Norway in August 2005.

Society of African Journal Editors Launched

The Society of African Journal Editors (SAJE) was launched in December 2004 at Nairobi, Kenya. It attracted editors, reviewers and other stakeholders in journal publishing from eight countries in Africa, namely Botswana, Ethiopia, Ghana, Kenya, Lesotho, Nigeria, South Africa and Uganda. The society's main objectives are: to facilitate and organise capacity-building activities geared towards improving the editorial and managerial skills of editors of African scholarly journals as well as raising the quality of journals published in Africa; to facilitate networking and promote the sharing of information, experience, resources and expertise among African journal editors as well as between them and their colleagues elsewhere in the world; to improve the promotion, marketing and distribution of African journals and contribute to their sustainability; to mobilise resources and provide support for the strengthening and growth of African journals; to promote maximum utilisation of African journals in the academia, the development community and among policy-makers; and, to enhance international visibility of African journals. The launching organised by the Rural Outreach Program headed by the Hon. Prof. Ruth Oniang'o (Nominated MP) also included paper presentations. The launching was sponsored by the Rockefeller Foundation, USA, the International Network for the Availability of Scientific Publications (INASP), UK, the International Food Policy Research Institute (IFPRI), MONSANTO Company USA, Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Rural Outreach Program (ROP), Kenya.

Open Society Initiative for West Africa (OSIWA) Supports Connectivity in Nigeria

OSIWA has approved a grant of US$ 293, 000 to support connectivity to nine Nigerian university libraries and National Mathematical Centre, Abuja. The grant would cover VSAT, required band with and 10 PCs for each library.

AIMS AND SCOPE

African Journal of Library, Archives and Information Science is established mainly to provide a forum for librarians, archivists, documentalists, information scientists and other information- related professionals in Africa to report their research findings but with emphasis on African setting. The Journal is refereed by distinguished scholars. Emphasis is on empirical research; however, manuscripts of high quality on theoretical aspects of the three information-related disciplines will be considered for publication.

MISSION

To provide on a regular and sustainable basis an excellent scholarly journal for reporting empirical research findings in the information profession in Africa.

VISION

To be the main resource base for library, archives and information science research in Africa.

NOTES TO CONTRIBUTORS

Contributors are to submit the manuscript by e-mail file attachment using MS word and a hard copy, typed double space on A4 paper. Ample margins should be provided. The title, author's name, position, place of work and e-mail address should appear on the first page. Subsequent pages, not more than 15, should include an informative abstract of not more than 100 words. A manuscript will be considered only if it has not been published elsewhere.

References and notes should be indicated in the text by names of authors and date of publication in brackets. The list of references should be listed in an alphabetical order at the end of the text.

References to journal articles should be in the following order: Author(s), date, title, journal's name, volume number, issue number and pagination inclusive, e.g.:

Mazikana, P.C. (1987) Archives and Oral History: Overwhelming Lack of Resources. *Information Development*, 3 (1) 13-10.

References to books should be in the following order: Author(s), date, title, place of publication, publisher, pagination, e.g.

Aboyade, B.O. (1989) *The Provision of Information for Rural Development.* Ibadan: Fountain Publications, 104 p.

References to contributors in collected works should be in the following order; authors(s), date, title of contribution, name of the editor, title of the collected works, place of publication, publisher and pagination inclusive, e.g.:

Neill, J.R. and Kotei, S.I.A. (1981) Towards a National Information System for Botswana. In: Inganji, Francis (ed.) *Use of information and Documentation for Planning and Decision Making.* Gaborone: NIR, pp. 36 – 53.

No charge is made for publication. Fifteen copies of reprints of each article will be supplied to the principal author.

Manuscripts and other editorial materials should be directed to the Editor-in-Chief, Professor L.O. Aina, Department of Library and Information Studies, University of Botswana (e-mail: ainalo@mopipi.ub.bw; ainalo2000@yahoo.com) or any member of the editorial board nearest to you.