

SERVICES, RESOURCES AND BENEFITS OF THE INTERNET AVAILABLE TO ACADEMICS IN GHANA

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ABSTRACT

The Internet, or the International network of computers, offers many services and resources which academics in Ghana can exploit to enhance their academic pursuits. The paper discusses some of these services, namely e-mail, telnet, ftp, Archie, newsgroups, and information discovery services like gopher, WAIS, search engines, directories and information gateways. The benefits to be derived from the use of the Internet by different categories of academics, particularly lecturers, students, administrators, researchers, librarians among others, are discussed. The major benefit is access to information on any conceivable subject located on library catalogues, online databases, newsgroups etc. These sources abound on the Internet for scholarly work. Other benefits are book selection medium, acquisitions, and virtual universities.

INTRODUCTION

Current and complete information is a vital and indispensable component of any academic environment. It makes for effectiveness in academic pursuits. Both lecturers and students need to use information daily in their various academic endeavours. For decades, both academic staff and students have actively used the library and its resources as their main information source. Today, information on any conceivable

subject from all parts of the world is available to any lecturer, or student once he or she has access to the Internet (or the net).

The Internet is a powerful worldwide network of computers, which interconnects thousands of national, regional and local computer networks scattered around the globe. It has a huge mass of online information from computer files, library catalogues, bibliographic databases, government organisations, industrial and commercial sources, newsgroups, individuals and others. The Internet is therefore a major information resource to all categories of organisations and individuals, including academics.

It has become an integral part of the economies of developed countries like the North American countries, where Internet access is widespread. It is actively used to augment classroom work and also as a major addition to library resource in these countries. It is commonplace to find both staff and students accessing information on the net for academic purposes. In fact, access to the Internet is viewed by faculty and students as a core resource and ranked similar to a library card. (USA Today, 1996).

The Internet started as a United States

Department of Defense project, the ARPANET. It was put into place in 1969 as a pioneering project to test packet-switching networks. ARPANET also provided links between researchers and remote computer centers, but was dismantled in 1990. Its successor, the Internet, continues to grow (Kahn et al, 1997). The Internet offers several services and resources which academics in Ghana can exploit to facilitate their academic pursuits.

SERVICES AND RESOURCES.

For academics to make effective use of the Internet, they must know the services and resources available on it and what they are used for. These services are electronic mail, file transfer protocol (ftp), telnet, newsgroups, talk services, private enhanced mail, and net-news among others. These services have been documented and discussed by many authors and researchers, among whom are Ed Krol (1992), Sheldon (1994), Dawson (1997) and Klobas (1997). Some of these services are briefly explained below.

Electronic mail

This is the basic activity of the Internet and a substitute for postal communications. It links computers by wired or wireless connections and allows users through their keyboard or other input device to post messages and read responses on their monitors. E-mail provides an excellent opportunity for the rapid and cheap exchange of ideas, questions and answers within moments, rather than days.

File transfer protocol (Ftp)

Ftp is the Internet resource used for transferring computer files around the Internet. It enables a user to get copies of any text or article of interest, or other computer file by transferring it from a host computer to his personal computer. A user can also use ftp to access anonymous accounts, which are host accounts that are open to the public, usually without charge. This procedure, referred to as 'anonymous ftp', often requires the provision of a password usually a personal e-mail address. Once a user gains access, he can navigate through authorized areas of the directory structure of the host computer and access any required information.

Telnet

Telnet is used for logging into other computers on the Internet. It is used to access lots of public services, including library catalogues and other kinds of databases. There are various Telnet clients available with different local capabilities and options, but they all fulfill one basic function. With telnet, a user is able to access whatever services the remote machine provides to its local terminals. The user must have an account and a password registered on the host before he can log into its public services and library catalogues. However, a non-account holder may be able to log on to some of these facilities as a 'guest', or use a public password to access a particular type of service from the facility.

News Groups

News groups are variously referred to

as bulletin boards, open forums, discussion groups, or electronic conferences (Klobas, 1997). A longstanding and widely used set of news groups is Usenet. Usenet is a group of systems that exchange news. It encompasses universities, government agencies, businesses, and home users. Users post announcements, gossip and speculations; they also pose and answer questions, comment on issues and developments, and ask for comments on drafts of papers. There are seven major news categories, these are:

- *Comp*- Computer Science and related topics. This includes computer science "proper", software sources, information on hardware and software systems, and topics of general interest.
- *news*- Groups concerned with the news network and news software. These include the important groups *news-newusers.questions* (questions from new users) and *news-announce.newusers* (important information for new users).
- *rec*- Groups discussing hobbies, recreational activities, and the arts.
- *sci*- Groups discussing scientific research and applications (other than computer science). *Sci* includes news groups for many of the established scientific and engineering disciplines, including some social sciences.
- *soc*- Groups that address social issues, where 'social' can mean politically relevant, socializing,

or anything in between.

- *talk*- Forums for debate on controversial topics. The discussions tend to be long-winded and unresolved.
- *misc*- Anything that does not fit into the above categories, or that fits into several categories

Information Discovery Services

The volume of information on the Internet is staggering. An April 1998 article in *Science* magazine measured the size of the Internet and reported 320million pages at the time. This figure has grown to 380million in addition to hundreds of new databases. (Kassel, 1999). Consequently, the most difficult task for Internet users is navigation; that is, finding the relevant files or databases on a subject of interest and where they are located. Several Internet services have been designed to improve file location and transfer and also aid information retrieval in general. These retrieval services include directories, search engines, meta-search engines, and information gateways. A few of these services namely, Archie, Gopher, WAIS, WWW, among others, are discussed below.

Archie

Archie facilitates the searching of indexes of what files are available on public servers of the Internet. It indexes over 1000 servers and 2.1million files worldwide. It is the place to start when searching for programs, data or text files. A user may ask Archie either to find file names that contain a certain search

string or suggest files whose description contains a certain word. It then returns the filenames that meet the search criteria, and the name of the servers containing those files.

Gopher

Gopher was one of the first tools that made a big difference to information provision and retrieval on the Internet. It started out as a distributed campus information service at the University of Minnesota. It is a menu-based system, and allows information providers to make their existing files of information accessible across the net. It also provides the Internet user with a simple interface to browse what is available, and to retrieve any information of interest.

WAIS

WAIS stands for Wide Area Information Server. It is designed to access indexed data. It has servers that maintain indexes of Internet documents. The system works in the following way: a user selects his sources from a list held by the WAIS system and gives it the search instructions. The client server contacts other servers on which the user's selected resources reside. These servers are prompted to run the searches and return the results to the user.

The World Wide Web (WWW or W3, or the Web)

The web is the fastest growing part of the Internet. It is a vast collection of multimedia documents located around the world and is based on hypertext documenting. A hypertext

document is organized as a number of pages, each of which has parts of the text acting as pointers to other pages in the document. If users want to know more about one of these linked elements, they simply select it, to display the relevant page. That page too may contain both ordinary and linked text from which they can proceed down a new path, or return to the previous page to take a different track.

Search Engines

Search engines are used to find specific information. They are web pages containing forms into which a user types search requests in the form of keywords. The search engine scans its database and presents the user with a list of web sites matching the search criteria.

The larger the index compiled by a search engine, the greater the chance of a successful search. The sizes of three of the popular search engines as at April 6th, 2001 were as follows; AltaVista - 560million, Northern Light - 350million and Excite - 250million (Searchenginewatch.com). The key features of two of the largest search engines as recorded by Kassel (1999), are as follows:

AltaVista (<http://www.altavista.com>)

- Good for specific searches.
- Offers an advanced query feature with more search options.
- Allows for a natural language query.
- Provides a translator between

English and five languages that is useful but has been criticized as not "too good"

- Offers Boolean and proximity searching.
- Includes field searching.

Northern Light (<http://www.northernlight.com>)

- Provides content that encompasses both the web and Northern Light's Special Collections, which are articles that can be purchased from more than 5,000 publications on a pay-as-you-go basis for \$1.00 to \$4.00 each. Some of these publications are not available from other commercial vendors.
- Advanced power and industry searches narrow results by document type, such as press release, or product type.
- Automatically refines every search by creating Custom Search Folders with similar sites by subject, source, or type.
- Enterprise accounts for corporations and organizations are available.

Metasearch Engines

Metasearch engines are search tools that allow a user to use several search engines concurrently to trace and retrieve information. Dogpile is an example of a metasearch engine; it allows one to search: 1) large search engines such as Infoseek, Excite, Lycos etc., 2) Usenet: Reference.com, Dejanews, 3) More than 2 dozen online news services or other types of sources concurrently. Other metasearch engines are Metafind,

Oneseek, Metacrawler, and others.

Directories

The Internet offers online directories also. These are online catalogues of websites and other Internet resources arranged in a complex hierarchy of categories and sub-categories; for example, Yahoo. The Yahoo directory is valuable for searching broad general topics. Queries sent to Yahoo are forwarded to a major search engine. This is especially useful since it is selective, rather than all encompassing like search engines.

Information Gateways

Information gateways are online catalogues of Internet resources that are used to locate high quality resources that are relevant to academic work on the Internet. They are produced by librarians or subject specialists. Some of the leading information gateways are:

- *Biz/ed: business and economics*
- *BUBL: library and information science*
- *EELS: computer science and engineering, cold region technology*
- *OMNI: health and biomedicine*
- *SOSIG: Social sciences.*

BENEFITS.

The Internet is a major information resource by virtue of the huge mass of information from computer networks and online resources like library catalogues, bibliographic databases, individuals' collections, newsgroups, government organizations, industrial and commercial sources, on it.

For academics in a developing country like Ghana, the Internet could not have come at a more opportune time. There is an acute shortage of current books and journals in academic libraries; resources which are essential for successful academic and research endeavors. The shortage has arisen from years of inadequate funding.

With the advent of the Internet, it is now possible for academics in Ghana to gain access to much needed information more readily for their various activities. All categories of academics, namely, lecturers, students, researchers, librarians, administrators and others, can benefit from the resources of the Internet.

Lecturers can subscribe to alerting services, news and discussion groups in their subject areas so as to remain current in their subject fields. For example, discussion groups of different subject areas can be identified by accessing a database called *'List of lists', News groups and Electronic serials* (at WAIS list.src). This database contains all known electronic mail discussion groups. *'Scout report for social sciences'* at (<http://scout.cs.wisc.edu/scout/report/socsi/>) is a USA Internet awareness service for academics, students and librarians in the social sciences. It offers an annotated list of new Internet resources that have been selected by librarians and content specialists working in the social sciences.

Academics can make professional contacts by accessing electronic

mailing lists of different subject groups, online directories of professionals in various fields and organizational home pages. These pages feature the people who work in these organizations, among other things. For example, *'College and University home pages'* (at <http://geowww.uibk.ac.at/univ/>) is a homepage of universities and colleges worldwide, which is arranged both alphabetically and geographically. A lecturer who needs to plan the content of a new course can access the websites of universities doing the same course, for such information. Some lecturers are making their course plans and lecture notes freely available over the net, in fact. An example is *'The World lecture hall'* (at <http://www.utexas.edu/world/lecture/>). This site contains links to pages created by faculty staff worldwide who are using the web to deliver class material. The collection is managed by staff of the University of Texas to allow academics to share their resources.

The net is most beneficial to academics in Ghana for research. With regard to student researchers, Kisiedu (1997) has stated that, "the net can aid students writing term papers to select research topics by browsing through databases". Library catalogues (which abound on the net) and online periodicals, (for example *'Ingenta'* at <http://www.ingenta.com>) offer free searching of millions of academic and professional articles from about 25,000 journals. Abstracts are accessed free of charge, and there are links to full text services on a pay per

view basis. These resources can be accessed by both lecturers and students for literature reviews.

Bibliographic databases with abstracts can help researchers to decide quickly on articles to order. Those with full text articles are a bonus, since the researcher can download articles of interest to save cost and time.

Researchers can also contact specialists in their fields of interest by identifying their addresses from mailing lists, conference reports and electronic journal articles. Doctorate students can avoid duplicating research topics by browsing databases of research in progress on the net. For example, 'Research libraries information network' (at telnet rlg. Stanford.edu) is one of the largest online catalogues encompassing most major research libraries in the United States. It has, among other resources, a database of research in progress (one needs to register first before accessing it).

Students who want to pursue postgraduate courses abroad can identify the universities offering courses of interest on the net, (previously such information was obtained from the British Council libraries and the United States Information services in most third world countries). Virtually all the correspondence with these universities can also be done by e-mail. Information on academic conferences also abounds on the net. According to Kirkwood (1997), "the web is an excellent source of information on past and future

conferences of all types". It is possible for an academic to ascertain the various conferences available in his subject area, select the ones of interest to him and obtain all the necessary information he may require on them. Some conference websites make provision for registering online, in fact.

Academic librarians can also take advantage of the net to improve their services. Reference librarians can use the net actively as a reference source. Apart from the many online library catalogues and other databases, they can also use BUBL (Bulletin Board for Libraries), which is an information service for library and information science professionals and the wider community they support. BUBL, according to McMahon (1995), "is an excellent reference tool which can help with all sorts of enquiries" (BUBL can be accessed at Gopher:BUBL.BATH.AC.UK).

Acquisition departments in most academic libraries in the developing world are experiencing inadequate funds and adverse changes in exchange rates, coupled with higher monograph and periodical costs. Therefore, they are only able to acquire a very small portion of the world's publications. This has made access to information on the Internet very important (Hollis, 1998). The acquisitions librarian can use the Internet to access Publishers' catalogues and library catalogues, which will aid in the acquisition process in several ways. It can be used, among other things, to check what will be published in the near

future and whether a title is in print or in stock, and how many copies are available. Book selection can be enhanced by the ability to check databases for information. Some library catalogues provide circulation details, which can indicate the popularity of a particular book (Hollis, 1998).

Databases on the net can be useful also. For example, OCLC's Firstsearch. OCLC (Online Computer Library Catalog) is one of the best known network catalogues. Originally American in membership but now international, it spans the Americas, Australia, New Zealand and most of Europe (Kisiedu, 1997). Its catalogues are available to users of every member library. Users of non-member libraries can only access OCLC by special arrangement. Firstsearch is a search mode established by OCLC to be used by libraries. The service is not directly accessible to individual users except through an OCLC library. The catalogues on Firstsearch consist of over 36 million records which cite material owned by libraries worldwide. Such databases can be used to check bibliographic information, to ensure that order records are of a high standard and contain sufficient information for the supplier to identify the book. According to Hollis, (1998) most university presses and many commercial publishing companies in the United States and United Kingdom, have their catalogues online; some with the facility to order online, meaning a book can be ordered immediately. This can be very

beneficial to academic libraries in Ghana. It is an efficient and fast means of obtaining materials.

The Internet can be used to make course information available and to supplement classroom instruction. Entire courses are now being offered on the Internet (Perry et al, 1998) and some universities are offering both undergraduate and postgraduate courses online. Africa too is a participant in the formation of virtual universities. The African Virtual University (AVU) started operating in July 1997 as a World Bank project, but is presently an independent organization with its headquarters in Nairobi. AVU's mission is to bridge the digital divide and the knowledge gap between Africa and the rest of the world by dramatically increasing access to global education resources throughout Africa. It maintains a sophisticated, Internet-based digital library of journals, academic studies, and textbooks that allow both student and teacher alike access to the world database of information. One of the project's objectives is to reduce the brain drain by offering an attractive alternative to studying abroad; that is, quality education of international standards and with international accreditation, at an affordable cost. AVU's focus is on areas of knowledge which are critical to economic development, but which are, inadequately catered for by local African institutions of higher learning; such as science, engineering and technology, management and health programs. The courses are taught by world-renowned professors from

universities in Africa, the United States, Canada and Europe. Courses are presently offered in English and French. AVU is offering pre-university courses, language instruction, business training, and seminars on various subjects, presently. Since the project was launched in 1997, it has accomplished the following:

- More than 12,000 students have completed semester-long courses in engineering and in the sciences.
- Over 2,500 professionals have attended executive and professional management seminars on topics such as Strategy and Innovation, Entrepreneurship, Global Competences, E-commerce and Y2K.
- 10,000 free e-mail accounts have been opened and can be accessed through the AVU web site.
- Students and professionals in 15 African countries including Ghana have received over 2,500 hours of interactive instruction in English and French (Martey, 2001).

The AVU currently works with 25 partner institutions in 15 countries. Participating institutions in Ghana are:

- the University of Ghana, Legon.
- the University of Cape Coast, Cape Coast.
- Kwame Nkrumah University of Science and Technology, Kumasi.

Conclusion

The benefits discussed so far show

that the Internet indeed is a valuable resource, and everything necessary should be done by government and university authorities to enable academics in Ghana to make effective use of its immense resources.

A recent study conducted at the University of Ghana showed that academics in Ghana have started using the Internet intensely; especially the e-mail service. Only a small percentage of academics were found to patronize services like telnet, ftp, metasearch engines and information gateways (Markwei, 2001). The study recommended among other things, the training of lecturers and students in the use of these services to equip and encourage them to take full advantage of the Internet in their academic endeavours.

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