The impact of information and communication technology (ICT) ON THE Ghanaian Academic publishing landscape: A Case Study of Central University College.

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By

sitsofe kwadzoe tettey

(BA (HONS) BOOK INDUSTRY)

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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CERTIFICATION

I hereby declare that this submission is my own work towards the M. Phil. and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text..

…….…… …… ……

SITSOFE TETTEY Signature Date

Certified by

…… …… ……

NANA AMPONSAA OPOKU-ASARE Signature Date

SUPERVISOR

Certified by

…….. …… ……

DR. JOE AGYEM Signature Date

HEAD OF DEPARTMENT

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ABSTRACT

In the academia, publishing plays a vital role in making research findings known. Lately, the advent of computers and information technology has changed the academic publishing landscape, making publishing and search for information quicker and easier.

The purpose of this study was to investigate how Information and Communication Technologies (ICTs) are impacting on publishing at the Central University College (CUC) in Accraand also what ICT policy CUC has. Using a population of 45 to assess the impact of ICTs on publishing at CUC revealed that the use of ICTs in publishing at CUC was minimal. The study found that 17 respondents had published books and none had published in a journal during the period. One striking feature about these books published was that 12 were self-published. Observation revealed that a large majority of academics in CUC who claimed to be competent in Internet use were found to have had no prior formal training and would need further training in order to acquire or sharpen their abilities needed in such areas as using File transfer and presenting course description on the Internet.

In the area of the use of ICTs in publishing, it came to light that even though CUC had provided computers connected to the internet, these computers were not used largely to publish. It was also realized that the respondents were not skilled in how to conduct a search on the Internet. A manual on how to conduct a search on the internet was therefore developed and pre-tested compiled to help users to conduct a search on the internet. It was concluded that CUC being a research institution has to do more in

the provision of ICT facilities to help enhance learning, teaching, research and publishing.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Over a quarter of a century ago, Ben Russak (1975) noted that traditional models of scholarly communication would be undermined by the photocopy machine and the computer. His prediction has held: the advent of new information technologies that have completely and irrevocably transformed the ways in which materials are created, structured, stored, transmitted, distributed, communicated, and accessed, have similarly transformed the means and modes of scientific communication. It is therefore not a new thing to tell the academic community that their desktop terminals connect them to the world in a way no previous means of communication has allowed.

What is under discussion here is the unprecedented power the Internet delivers to the final user in terms of publishing among the Academe. It means that academics who so wish can instantly deliver their message across the world; they can make available to interested audiences (at the appropriate level) their research findings and contributions to human knowledge in their fields of specialization.

For the first time in the history of the world, a single, homogeneous depository of knowledge to which millions of people have easy and cheap access on a global scale is available to those who want to use it. This new collective intelligence however,

brings with it, a whole new range of opportunities and problems.

The Internet, and more specifically the World Wide Web (Web), has brought in new paradigms to the work of the academic community. By its very nature, the Web applies a metaphor of broadcasting: a number of people, organisations, institutions, groups, and enterprises (or even a single individual) can broadcast their message to the world for others to receive it in the same way that they receive other signals from television, audio-media, radio, telephone and fax machines. Is it a situation of the science world entering that of the media and having an impact? This is highly possible but this also generates more questions: where does one draw the line between science and the media? Several reasons seem to exist for this.

First and foremost, there is apparent widespread technophobia: not all members of the academic community view electronic publishing with enthusiasm. Personal experience shows that some members of Academe in Ghana either regard the issue of electronic publishing as a technical detail or technical advance which their secretaries or computer support team must master, in much the same way that a typist must handle a typewriter. This dichotomy in perception contrasts sharply with how scientists approach personal computers to disseminate information and communicate through formal and informal means via "visible" and "invisible" colleges, technical meetings and conferences.

Secondly, the question arises from the rapid pace of technological change and the possibilities of keeping up with it. There certainly are limits to the time academics can

devote to upgrading their skills and understanding possibilities available in cyberspace.

With Information and Communication Technology (ICT), writing and publishing should be simple as compared with the complexity of traditional publishing. Since books and printed journals continue to be seen as the standard way of distributing knowledge, electronic publishing technologies have to go a long way to gain audience and be established themselves for good. Time therefore emerges as another important factor for the take-up of these technologies, together with the associated socio-economic and cultural challenges.

Information and Communication Technology is the major change perceived in the world of academic publishing. While some people may see the quality dimension of publishing deteriorating for good, others welcome the seeming "no control at all" characteristic. The new medium is fast and simple, cutting down all the intermediate traditional filters in the publishing industry although these serve also as a safety belt for all types of intrusion. Adjustment to this speed is not easy, hence the mixed reactions.

Another major factor is globalization. By means of electronic publishing, a document is instantly made available to the world without the aid of the intermediate structures of publishers, librarians and bookstores. Today's information technologies have created new vehicles for informal communication, including e-mail, list servers (automated e-mail discussion lists), and preprint archives. These vehicles are being assimilated into the whole of the scientific communication system that aims at

affording "some measure of fairness and large amounts of skeptical testing of ideas and findings" (Griffiths 1990).

It is, however, published communication that especially informs science, scientists, and scientific research. As, Pierce (1990, p. 55). notes, "scientific research is recognizable as such not because of the conditions under which it is performed but because of the way it is presented and published". The new technology in publishing is what academics need to satisfy the “publish or perish” requirement as it allows for self-publishing.

Self-publication is a challenge to established scholarly publishing by new technologies. Specifically, informal publication through self-posting to websites or to large databases of technical papers, might—while increasing the flow of information, particularly in fields where access to the most current information is prized—inhibit formal academic publication, which is necessary for exposure among peers, for promotion, tenure review, and generally, career enhancement (Kling and McKim, 1999).

One key implication of the new information technologies however, has been to undermine the traditional notion of print "publishing"—which basically means to “make material publicly available”—without replacing it with a new definition (Arms, 2000, Kling and McKim, 2001). Electronic journals also challenge accepted traditional procedures in the journals publication process. This is because the publishing industry is overhauling its traditional ways of communication to incorporate new processes to the extent that some believe the use of computers are

becoming a threat to one of the oldest professions in the world while others are making frantic efforts to apply computers to every area of publishing.

Publishing in academia is important perhaps, for the benefit of researchers and the gains the society at large derives from the publications. For the teaching staff of the institutions of higher learning, publishing depicts a vibrant, energetic and progressive academia. The "publish or perish" accolade attached to the conditions of service of all university teachers makes it obligatory for teaching staff to pay a lot of attention to electronic research and publishing.

1.1 Statement of the Problem

Central University College (CUC), a private university in Accra, Ghana, was 10 years old in 2008. One of the much-touted attributes of the institution is its Information and Communication Technology (ICT) based programmes, which implies direct application of computers and other communication tools for teaching, research, learning and administration. As an ICT-based tertiary institution, CUC has provided personal computers that are net-worked internally and hooked onto the internet on a 24 hour basis for use by both staff and students. The idea is that faculty would tap this resource and use it to develop their lecture notes and also use it for research. This however, seems not to be the case since not every faculty even uses the facility in the classroom.

Instead of the computers in CUC being adopted to enhance publishing, they sit in staff offices unused, leading to inactive academic publishing. A plausible reason for this may be the lack of knowledge and skills in computer usage among the academic staff

of CUC, whilst others may also not be conversant with the use of computers and their application in all aspects of academic work.

Computers may also be a challenge to academics whose training did not include computers. This group has to be assisted to enable them adapt computers to academic work. They could be helped to use computers to communicate with their students and colleagues as well as post their course outlines, lecture notes and assignments on the College web-site for easy access by their students. The computer can also be used to mail research papers to colleagues for peer reviewing and to search for information on the Web, an exercise which in itself is of vital research interest.

Personal experience as an IT staff in CUC indicates that some faculty use the computer to check their mail only, but in some cases the computers only serve as decoration for the offices. Interestingly some faculty at CUC seem to enjoy the use of computers as tools for teaching, research and publication. What motivates this diverse use of computers by faculty of CUC is of direct interest to this study which also aims at finding out the kind of ICT policy CUC has; and, what it is doing on the use of their computers; to ensure their use not only in teaching but also in academic publishing by its faculty.

1.2 Research Questions

1. What is the nature of the ICT revolution at Central University College?
2. How is CUC's ICT policy implemented to encourage integration in teaching and learning at CUC?
3. How can a manual on Internet search improve teaching, learning, research and

publishing at Central University College?

1. 3 Objectives of the Study

The objectives of the study are:

1. To examine Central University College's ICT policy and how it applies to academic and research work.
2. To assess the impact of ICT usage on academic publishing at the Central University College.
3. To develop and test a manual on Internet usage for research and publishing.

1.4 Delimitation of Study

This study is limited to the use of computers, telephone, scanners, modems and fax by academic staff of CUC.

1.5. Limitations

Limited time and limited cash resources were a major limitation to the study.

1.6 Definition of Terms

Information	Organized and processed data about a subject that is to be published.
Information Technology	the use of Computers and other devises including software to communicate.

Communication	The process of transfer of information from a source to another through a medium.
Information And Communication Technology	The use of computers and electronic systems for storing and transfer of information from one end to another.
Revolution	A situation in which people completely change their systems to adopt the use of another system altogether through force or coercion.
Information And Communication Technology Revolution	is a complete and radical change in the use of computers and electronic systems for storing and using information.
Cyberspace	An imaginary space through which electronic mails and data is transmitted from one device to another.
Publishing	To make known
Baccalaureate	the baccalaureate A academic degree conferred on someone who has successfully completed undergraduate studies

1.7 Importance of the Study

This study will challenge staff of Central University College and those in other educational institutions in Ghana to engage in online publishing activities. It will serve as a study guide to faculty, students and administrative staff who have difficulty

using of computers to learn or teach. It will also help them to upgrade their skills and gain confidence to apply skills acquired to search for information on the internet.

1.8 Abbreviations

ICT - Information and Communication Technology

CUC- Central University College

CUP- Central University Press

1.9 Organisation of the rest of the Text

Chapter Two- provides a review of related literature on ICT. Chapter Three deals with the research strategies adopted to describe and explain the ICT usage at CUC. Chapter Four discusses the data gathered in the study, its analysis and interpretation of the situation in CUC while Chapter Five provides the summary, conclusions drawn and recommendations for promoting ICT usage in CUC.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2. 0 Introduction

Studies on the implications of information technology for scholarly publishing and communication are diverse. The new technologies challenge the very definition of "publication" and raise new questions about the economic and legal underpinnings of the publishing industry (Treloar, 1996). This review focuses on literature on ICT usage in research and publication in academia.

2.1. Information and Communication Technology

Information and Communication Technology (ICT) is a shorthand for the computers, software, networks, satellite links and related systems that allow people to access, analyze, create, exchange and use data, information, and knowledge in ways that until recently, were almost unimaginable. Beebe (2004) explains that the term ICT is used almost interchangeably with the Internet. The Internet and its applications (the most well known being the World Wide Web) are described by Beebe as a shorthand for the infrastructure that brings together people in different places and time zones, with multimedia tools for data, information, and knowledge management in order to expand the range of human capabilities.

2.2. ICT Revolution and its Characteristics

Herselma (2003) observes that the ICT revolution is synonymous and a consequence of many waves of technology revolution and that from its early use as mainframe computers for scientific research, ICT has been applied to the automation of complex business processes. Today, it is widely acknowledged that a country's socio-economic growth is positively linked to her ICT development and adoption. ICT is said to have the potential to reduce cost, enhance productivity and add economic value; and enables new and improved business processes to deliver products and services with greater effectiveness and efficiency. It is reported that the amount of knowledge and skills that the workforce have coupled with effective use of technology are critical drivers needed to improve the competitiveness and productivity of a country's corporations, industries, and ultimately the whole economy.

Many developed countries have attained leadership position through massive investment and adoption of ICT. According to Beebe (2001), while the impact of ICT is quite obvious, it is useful to also understand the following characteristics that are associated with ICT development in order to formulate an effective national ICT strategy. The characteristics are:

- ICT is subjected to network externalities, which means that once a certain critical mass of users of an application or a technology is reached, the network will experience exponential growth in users, usage and hence, value.

- ICT is disruptive because it cuts across sectors and can disintermediate established networks and relationships between producers, distributors, dealers and end users. New applications and business models enabled by ICT will replace inefficient organisations and businesses.
- Successful application of ICT may come from unexpected sources.
- The best application often does not come from the best or latest technology but from innovative use of knowledge, skills and technological applications that meets the needs of the market.

The above characteristics imply the dynamics of planning for ICT. Adopting this involves having to deal with speed, inter-operability standards, uncertainty and risks. The strategy for adoption implies being open to unexpected successes and failures, and by incorporating of plans for learning and discovery. It is this scenario that accounts for growth of institutions where ICT is applied and used.

2.3. Global Trends

Universities are expected to contribute to society by widening access to higher education, continuing professional development, applied research, contributing to local economic impact, and improving social inclusion. Reviewing experiences in the use of ICT for education, UNESCO (2003) indicates the following trends:

a. ICTs are becoming an integrative part of national education policies and plans. ICTs are reflected in University strategic plans and documents derived from that plan, such as information policy plan, information master plan and information project plans.

b. The convergence of technologies has become a driving force for educational reform, making it possible for teachers and learners (and related support professionals) to connect better to information, ideas and each other via effective combinations of pedagogy and old and new technologies.
c. ICTs for teaching and learning undergo at least three phases: a substitution phase where traditional teaching occurs with the use of new technologies; a transition phase where new teaching and learning practices begin to appear as established practices start to be questioned; and a transformation phase where the new technologies enable new practices.
d. Lecturers are able to break away from professional isolation. With ICTs, they can easily connect with lecturers from other countries and with sources of teaching materials.
e. With information more readily available learners are not dependent on lecturers and librarians for information. Learners are helping redefine the role of lecturers and librarians so learners can focus on analyzing information and sharpening their critical thinking skills.
f. ICTs are altering the functions of libraries and changing the role of librarians. With a wealth of learning resources on the Internet, some of which are freely available, librarians are becoming information managers or *cybrarians*. These cybrarians will be computer experts and information brokers (Nentwich, 2003) who will be involved in structuring and will be engaged in publishing as well as in teaching.
g. Researchers are no longer faced with a lack of information but a glut of information. Data sharing, peer review and developing a network of contacts are no longer constrained by distance as access to email, web based file and data sharing and web logs become more ubiquitous.

This shows that ICTs have a major role to play in education and also transcend all the spheres of an educational system. It also implies change from the traditional systems of sharing information that restricts information by

location and propagation, to a new electronic system that has the exhibits of a revolution. ICTs by this description provide a way for the sharing of information by faculty and their students to enhance the learning process. These observations are in line with the purpose of the study which seeks to examine how the use of ICTs is impacting on publishing in academia of Central University College.

LaRocque and Latham, (2003) also outline other advantages of ICT use as follows: the use of ICTs in education is the setting up of franchise-like arrangements where an institution (A) approves an institution (B) in another country to provide one or more of A's programmes to students in B's country.

i) Universities are entering into partnerships with the private sector, in order to stay current as well as to get help on maintaining operation and financial viability of ICT based education programmes.

j). The Internet, and associated ICTs, is making it possible for various forms of cross border education, including trade in education. In this process the relevance of traditional quality assurance mechanisms is being questioned and new mechanisms for ensuring quality in transnational education are being proposed (LaRocque and Latham, 2003).

The implication of these is that ICTs can be used positively to enhance the provision of distance education and learning even across national borders. The use of ICTs in

education is also supportive of publishing among academia as their use enhances research and publishing in the educational environment.

2.4 The Publishing Process

Traditional publishing is still the preferred medium for communicating and sharing information and ideas between people. Books and printed matter will probably remain for a long time to come. The success of this form of communication between writer and reader not only requires viable commercial activities in publishing, printing, distribution and bookselling but also concerns issues of professionalism, freedom of expression, legislation and policies, the availability of library services, education and training, and many others. Together, these issues and processes are known as the 'book chain' (Alemna,2001).

According to Alemna, the publishing process is making information known especially in the form of a book. The traditional process of publishing is a lengthy process of courtship between author, agent, and publisher. The first thing that happens is that an author writes a manuscript and tries to get an agent to take it to a publisher. Alemna describes an Agent as the person who either commissions a writer to write a book on a particular subject or receives an unsolicited manuscript from an author which is assessed for its suitability for publishing. Once represented, the author writes a query or proposal and submits it to a publishing house through the agent. The publishing house can either accept or reject the author's work.

If the author's query is refused then the manuscript can to be taken to another publisher. The reality of the query process is that a writer with a good, clean, well written and well edited manuscript can make the rounds at many different publishing houses before the manuscript is accepted. This process can take years and requires incredible persistence as each publisher can take up to six months to generate a letter of rejection. If accepted the publishing house buys the rights to the author’s work

from the writer and pays an advance on royalties that would accrue later in the sale of the books. The publishing house decides when to publish the book, they edits the content, select the cover design, print a projected number of copies they think will sell, and then distribute the book to its contracted book sellers.

Alemna (2001) asserts that once the book is distributed, the publisher may or may not actively promote the book. The total sales also dictate the percentage of royalty the author earns. Many authors are surprised to discover that once the book is distributed the author is expected to promote it at their own expense. If a book does not sell as well as expected in the first 120 days, some publishing houses require the author to return the monies paid them but if it is successful, the author could be the next best seller. Some authors may decide to avoid the process mentioned above and publish on their own which is known as self publishing (Alemna, 2001).

2.5 Self Publishing

In the process of self publishing, the author becomes the publisher. An author must not only write the book but must also pay for the cover design, the editing, the printing, the advertising, and the distribution as well. This also involves the preparedness to market, fill orders, and run a good public relations campaign on the book. This means the author owns the work outright and if he or she is an aggressive promoter, the book can sell its way to the best seller list with a good sales strategy.

In modern times, this includes having a powerful website to boost and support sales. The good news is that an author can have the book published online in six months from a completed manuscript as opposed to traditional publishing which takes more than a year. There is however, a stigma associated with self publishing in some circles; however, for many budding authors it is their saving grace. Once in print and on the bookseller's shelf, the average reader cannot discern a self published book from one that has been traditionally published.

Speed does have a high cost. Depending on the self-publishing company the author selects, costs upwards of $20,000 can usually be expected in advanced countries whereas in Ghana an average of $1,000 will do for the first time. The snag is that one gets what is paid for in the process because it is the author's book, cover, and content.

There are some drawbacks to self-publishing that go beyond the expensive initial outlay. Publishing and promoting a book is time consuming. This requires a unique blend of marketing and business savvy that most authors do not have to start with but quickly become adept with subsequent publications. Most of the work associated with getting a book successfully marketed and in the hands of the reading public require performing tasks like marketing and advertising skills which are totally unrelated to writing.

It is also known, according to Peek and Robin (1996), that the decision time to select a publishing method calls for a complete analysis of the goals the author has for publishing and the type of fortitude they have. Some of the problems an author may face could range from delays to the risk of being asked to return advances if a book does not sell. If they are persistent, and have a resistance to rejection, then traditional publishing might be the path. But if pressed for time, a self-starter who is highly

organized with a good manuscript, an editor with good advertising skills, and cash, then the option to self publish is then the right choice. It must be emphasized though that each publishing method has its merits and shortcomings but with careful thought and analysis authors can make a confident choice as they follow their publishing dreams (Pullinger 1999).

An academic paper may undergo a series of reviews, edits and re-submissions before finally being accepted or rejected for publication. This process typically takes several months. There is often a delay of many months (or in some subjects, over a year) before a paper becomes a publication, particularly for the most popular journals where the number of acceptable articles outnumbers the space for printing. With the advent of online publishing these problems are being resolved (Resh and Vincent, 1996).

2.6 Academic Publishing

Quite different from self publishing is academic publishing. Peek (1996) explains that academic publishing describes the subfield of publishing which distributes academic research and scholarship. According to this source, most academic work is published in the form of journal article, a book or a thesis. Much, though not all, academic publishing relies on some form of peer review or editorial boards in the respective academic disciplines refereeing articles to qualify papers for publication.

Most established institutions have their own journals and other outlets for publication, though many academic journals are somewhat interdisciplinary, and publish work from several distinct fields or subfields. The kinds of publications that are accepted as

contributions of knowledge or research vary greatly between fields, as do review and publication processes. A scholarly paper is one of those publications that contributes to knowledge (Peek, Robin & Gregory 1996).

2.7 The Academic Publishing Process

The process of academic publishing is divided into two distinct phases. According to Peek (1996), these are the processes of peer review and copy editing. The process of peer review is organised by the journal editor and is complete when the content of the article, together with any associated images or figures, are accepted for publication. Today, some peer review processes are increasingly managed online, through the use of proprietary systems, or commercial software packages such as Scholar One Manuscript Central, Aries Editorial Manager, and EJournal Press.

Academic publishing involves a paper or an academic work that is usually published in an academic journal. It contains original research results or reviews existing results. Such a paper, also called an article, will only be considered valid if it undergoes a process of peer review by one or more referees (who are academics in the same field) in order to check that the content of the paper is suitable for publication in the journal (Treloar, 1996).

Treloar (1996) asserts that once peer review has been completed, the original author(s) of the article will modify their submission in line with the reviewers' comments, and this is repeated until the editor is satisfied. The production process, controlled by a production editor or publisher, then takes an article through

copyediting, typesetting, inclusion in specific issue of a journal, and then printing and online publication.

Copy editing seeks to ensure that an article conforms to the journal's house style, that all of the referencing is correct, and that there are no spelling or grammatical errors. Typesetting deals with the appearance of the article, layouts, fonts and headings (both for print and online publication). Historically, these activities were all carried out in-house by a publisher, but increasingly are now subject to outsourcing (Pullinger, 1999).

The author will review and correct proofs at one or more stages in the production process. The proof correction cycle has historically been labour-intensive as handwritten comments by authors and editors are manually transcribed by a proof reader onto a clean version of the proof. In recent years Trolley, (1998) indicates that this process has been streamlined by the introduction of e-annotations in Microsoft Word, Adobe Acrobat, and other programs, but it still remains a time-consuming and error-prone process. This shows that academics with knowledge and skills in ICT can easily cut short some of the processes that delay their publications.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter explains the research methods used in the study. This study is based on the qualitative research approach to ascertaining the impact of ICT on publishing activities of the teaching staff of Central University College. The report documents the ICT policy of CUC, the experiences and trends of publishing among teaching staff of the university. Data was gathered by means of self-administered questionnaire designed with in-depth open-ended questions for interview and self administration.

3.1 Research Design

Research design is a general strategy or plan for conducting a research study. The description of the design indicates the basic structure and goals of the study. This study is designed to employ the use of qualitative and descriptive research methods to collect data on the impact of ICTs on publishing at the Central University College, Accra.

3.2 Qualitative Research

According to Best (1991), qualitative inquiry seeks to portray the complex pattern of whatever is studied in sufficient depth so that whoever has not seen it may have the opportunity to understand whatever is being studied. Sidhu (2003) and Tuckman (1994), explain that qualitative research emphasizes holistic description of whatever is being observed rather than comparing the effects of a particular treatment while Ary,

Jacobs and Razavie (2002) assert that qualitative inquiry seeks to understand human and social behaviour from the "insider's perspectives". This means that in qualitative inquiry, there should be vivid description of phenomena. According to Best (1995), qualitative inquiry seeks to portray the complex pattern of whatever is studied in sufficient depth so that whoever has not seen it may have the opportunity to understand whatever is being studied.

As McMillan and Schumacher (1993) explain, qualitative research requires a plan for choosing sites and participants, and for beginning data collection. According to them the plan is an emergent design, in which each incremental research decision depends on prior information. The emergent design may in reality, seem circular as processes of purposeful sampling, data collection plan, and partial and final data analysis plans are simultaneous and interactive rather than discrete sequential steps.

3.3 Advantages of Qualitative Research

Qualitative research seeks to understand a given research problem or topic from the perspectives of the local population it involves (Bernard 1995). It is especially effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of particular populations. The strength of qualitative research is its ability to provide complex textual descriptions of how people experience a given research issue (Denzin and Lincoln 2000). The authors explain that qualitative research provides information about the “human” side of an issue – that is, the often contradictory behaviours, beliefs, opinions, emotions, and relationships of individuals. Qualitative methods are also effective in identifying

intangible factors, such as social norms, socio economic status, gender roles, ethnicity, and religion, whose role in the research issue may not be readily apparent.

When used along with quantitative methods, qualitative research can help to interpret and to better understand the complex reality of a given situation and the implications of quantitative data. Although findings from qualitative data can often be extended to people with characteristics similar to those in the study population, gaining a rich and complex understanding of a specific social context or phenomenon typically takes precedence over eliciting data that can be generalized to other geographical areas or populations. In this sense, qualitative research differs slightly from scientific research in general. Although qualitative research emphasises the description and interpretation of data in words rather than in numbers, some numerical data were collected in the process and analyzed as such to examine how ICT is applied to publishing at CUC.

3.4 Qualitative Research Methods

Nkwi and Nyamongo (2001) explain that there are three most common qualitative methods explained in detail in their respective modules below as participant observation, in-depth interviews, and focus groups. Each method is particularly suited for obtaining a specific type of data.

• *Participant observation* is when the researcher participates fully in the activities being studied but is known to the participants that he or she is a researcher. This method is appropriate for collecting data on naturally occurring behaviours in their usual contexts.

• *In-depth interviews* are optimal for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored.

• *Focus groups* are effective in eliciting data on the cultural norms of a group and in generating broad overviews of issues of concern to the cultural groups or subgroups represented.

Blease and Cohen (1990), assert that in qualitative research, the researcher allows conditions to flow at their own pace without any attempt to manipulate behaviour, besides being concerned with the description and explanation of phenomena as they occur in a routine, ordinary natural environment Bailey (1992) states that in qualitative studies, the researcher is the primary instrument for collecting, gathering and analyzing data. According to Denzin and Lincoln (1998), because the method studies human experiences and situations, researchers need an instrument flexible enough to capture the flexibility of that human experience. The human instrument is essential in qualitative research to talk with the people in the setting, observe their activities and read their documents and written records, and to record the information in form of field notes and journals.

According to Cohen and Manion (1997), qualitative inquiry emphasizes data in the form of words rather than numbers. That is to say, emphasis is on the description of people, events and whatever happens in the research setting. This means that in qualitative inquiry, data must be thoroughly described in detail so that "outsiders" may be able to understand whatever has been done. On the other hand, there is room for collection of data in numerical terms although this may be done in rare cases. This is in line with Hitchcock and Hughes' (1995) assertion that qualitative research deals in words and meanings while seeking to maximize understanding of events and facilitating the interpretations of data. This brings in Ary, Jacobs and Razavieh's

(2002) explanation that the purpose of qualitative research is to emphasise the typically rich descriptive and subjective character of data. This makes qualitative data analysis a very different enterprise than statistical analysis.

Cohen and Manion (1995) are also of the view that in qualitative research, the researcher does not know or predict the outcome of a design as in quantitative inquiry where the outcome of a research is already determined. This is because in quantitative research, the researcher has specific hypothesis in mind and can determine the outcome of the study whereas in qualitative inquiry, the design emerges as the study unfolds. Best (1991) also observes that whatever can be learned at a particular time and setting are determined by the nature and types of interactions that go on between the inquirer, the people and the setting and this is not predictable until the researcher has witnessed the proceedings.

Adopting the qualitative research method enabled the researcher to collect information from persons who use ICTs and not the items per se. This was done to understand the underlying factors involved in the use or non-use of ICT in academic work and publishing in particular.

3.5 The Population

Population is the group of interest to the researcher whiles the group to which the results of the study will ideally be generalized, is referred to as the target population. Gay and Airasian (2003) say that it is important that by selecting from a more narrowly defined population one will be saving time and money but generalizability

would also be lost. It is important therefore to define population in detail so that others may determine how applicable findings are to their situations. In this study, the target population comprised 230 teaching staff of CUC, of which 50 who are located at Mataheko and Dansoman campuses of the university. This included staff of the School of Business and Administration, and the School of Theology and Missions.

3.6 Sampling

Sampling is the process of selecting a number of individuals from a population, preferably in such a way that the individuals selected represent the larger group (Gay and Airasian 2003). According to Sidhu (2003), sampling is the process of selecting a representative unit from a population while Cohen and Manion (1994) explain that in sampling, the researcher endeavours to collect information from a smaller group or subset of the population in such a way that the knowledge gained is representative of the total population under study. Jankowicz (1999) defines sampling as the deliberate choice of a number of people, the sample, who are to provide you with data from which you will draw conclusions about some larger group, the population, whom these people represent.

Because the target population of CUC is too large to effectively study, 50 lecturers of the school of Business Management and Administration (SBMA) and School of Theology and Missions (STM) were selected for in-depth study. This was done by means of random sampling which Cohen and Manion (1994) define as the process of selecting a sample in such a way that all the individuals in the defined population have an equal and independent chance of being selected for the sample.

Sampling involves the use of probability and non-probability methods. In this study probability sampling was used because the population consists of a uniform category

of staff who answered the same questions. The purposive sampling technique was adopted to select 50 faculty on full-time teaching for in-depth study. Web based and traditional bibliographic sources for academic publishing in CUC were also examined for additional data.

3.7 Instrumentation

According to Fraenkel and Wallen (2000), instrumentation is generally the whole process of collecting data. It involves not only the selection or design of the instruments but also the conditions under which the instrument will be administered. The authors indicate that the most common types of instruments used in survey research are the questionnaire and the interview schedule. The choice of method usually depends on cost, resources and time at the disposal of the researcher. On the other hand, Ary, Jacobs and Razavie (2002) refer to instrumentation as a process used to solicit information in research. They cite questionnaires, interviews and observation as examples of research instruments but considering the nature of the study and the data required, questionnaire and interviews were combined and found to be most suited to this study as they offered opportunity to get closer to the respondents. Combining instruments made validation of the data possible as different sources were consulted in order to overcome inherent weaknesses of each of the techniques to improve the authenticity of the study.

3.8 The Questionnaire

Asante (2000) explains questionnaire which is an important tool for eliciting information on specific problem from knowledgeable informants as a set of questions that have been structured with the sole aim of collecting data.

Sidhu (2003) defines a questionnaire as a form prepared and distributed to secure responses to certain questions. In other words, it is a device for soliciting answers to questions listed on a form which the respondent fills by himself whiles McMillan and Schumacher (1993) view a questionnaire as an instrument which a researcher presents to solicit reactions, beliefs and attitudes, Leedy (1995) also sees it as a commonplace instrument for observing data that is beyond the physical reach of the observer and which for example may be sent to people who are far away and whom the researcher may never see.

Aleck and Settle (1985) have observed that effective survey questions have three main important attributes: focus, brevity and simplicity. Fowler (1984) also points out that there are four practical standards that all survey questions should meet:

1. Is this a question that can be asked exactly the way it is written?
2. Is this a question that will mean the same thing to everyone?
3. Is this a question that people can answer?
4. Is this a question that people will be willing to answer?

Since the sample of teaching staff who formed the population studied were scattered on the three campuses of CUC at Mataheko, Dansoman and Miotso in Accra, questionnaire administration was deemed most appropriate to reach all the participants within a short time.

3.9 Questionnaire Administration

There are four main types of and means of administering the questionnaire: the mailed, individual, grouped and digitized methods. Each of these methods has

advantages and disadvantages. The choice of a method however, depends on such factors as calculus of things like cost, convenience, and the nature of the questions being asked (Fowler, 1984 to overcome inherent weaknesses of each form

These are two forms of questionnaire: open and closed ended were adopted. The closed ended questionnaire consisted questions that called for short check responses while open questionnaire or structured form of questionnaire called for free responses in the respondent's own wards). A combination of open and close-ended questions was used, making it semi-structured. However, there were more close–ended questions than open items because close-ended questions are easy to analyse as all subjects respond to the same options.

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Close-ended questions, in the opinion of Fraenkel and Wallen (2000), enhance consistency of response across respondents because they are easier and faster to tabulate. The authors indicate that close-ended questions may limit breadth of responses; take more time to construct, and requires more questions to cover the research topic. On the other hand, open-ended questions help respondents to say what they want to say freely without restriction. According to Marshal (1997) open ended items give respondents a chance to present views which might not have even occurred to the researcher.

In this study, the self-administered or individual method questionnaire administration was adopted for the data collection. In this case individual respondents were given the questionnaire to complete on their own with the researcher there only to help answer the questions where necessary. The self-administered method of questionnaire

distribution was preferred because it enabled the researcher to reach a large number of people at the same time, and also ensured the anonymity of respondents. It is also cost-effective in terms of money and time, and the response rate is very high (Fraenkel and Wallen, 1993).

The questionnaire was administered to the sample faculty on different days to all the 50 faculty of CUC's SBMA and the STM schools. The questionnaire which consisted of 27 questions (as shown in Appendix B) sourced information in four areas:

1 Computer literacy level before joining CUC.

2 Publishing activities of staff before the advent of the Information and Communication Technologies, considering the number of years staff had been in employment at the university.

3 Ways in which information and communication technology has impacted on respondents publishing activities presently as compared to the past.

4 The respondents' opinion about publishing on the internet. The aim of this strategy was to know the extent to which the teaching staffs of CUC are involved Electronic publishing and how this reflects on publishing on the Internet.

3.10 Observation

Additional information was also sought through observation. According to Gay and Airasian (2003) in an observational study, the current status of a phenomenon is determined not by asking questions but by observing. They assert that for certain research questions, observation is clearly the most appropriate approach. In this study, books published by the faculty members studied were examined to validate

information gathered through the questionnaire. Direct observation was used to observe how the staff use the computer to seek information either in their subject areas or for research work.

3.11 The Interview

McMillan and Schumacher (1993) define interview as a direct verbal interaction between the interviewer and the subject. Ndagi (1997) also explains that interview is unique in that it involves the collection of data through direct verbal interaction between the interviewee and the interviewer. Similarly, interview has been defined by Leedy (1997) as two person conversation initiated by the interviewer for the specific purpose of obtaining research relevant information. Gay and Airasian (2003) mention two types of interview: Structured Interview and Non-Structured Interview.

They describe Structured Interview as one in which the content and procedures are organized in advance. This means that the sequence and wordings are determined by means of a schedule and the interviewer is left little freedom to make any modification. Structured Interview according to Gay and Airasian (2003), however, is a more casual affair in its own way but it also has to be carefully planned. They are flexible, have few restrictions placed on the respondent's answer, and queries can be altered to suit the situation and subjects. In this study, telephone interviews were conducted with six teaching staffs of CUC who were not available during the piloting of the questionnaires.

3.12 Preliminary Testing of Manual on Internet Search

To test the validity and reliability of the manual designed to guide faculty of CUC to effectively search information on the Internet, non-structured interviews and observations were conducted and made to collect information to enable the researcher observe the information seeking behaviour of both staff and students. This was necessary to satisfy the expectations of the users of the manual on how search could be conducted to find the desired information on the internet. Six students and three teaching staff were interviewed and observed.

The process first involved observing some students as they searched the internet for information for their long essays after which they were interviewed to have an idea of what they know about conducting a search on the internet. The teaching staff was also observed looking for information related mainly to their field of work after which they were also interviewed on what they know about conducting search on the internet. Findings from the interview and the observation formed the basis of a manual compiled to help internet users in CUC.

3.13 Data Analysis Plan

Data collected through questionnaires were analysed with the aid of Microsoft Excel application software and assembled in tables that describe the impact of ICTs on publishing at CUC. The tables were then analyzed and interpreted to give an idea of the ICT and publishing situation at CUC.

CHAPTER FOUR

DISCUSSION AND ANALYSIS OF MAIN FINDINGS

4.0 Central University College

4.1 Introduction

Central University College (CUC) is an educational initiative of the International Central Gospel Church (ICGC). It has its origins in a short-term pastoral training institute, which was started in 1988 by the church and incorporated in June 1991 as Central Bible College. The name was changed to Central Christian College in October 1993 when it upgraded its programmes to the baccalaureate level. When the College expanded its programmes to include the Business School in 1997 to reflect its orientation, the name of the college was again changed to Central University College.

Central University College (CUC) now consists of the School of Theology and Missions (STM), and the School of Business Management and Administration (SBMA), CUC offers courses in science, medicine, and engineering. As a groundbreaking private Christian tertiary institution in Ghana, CUC is distinctive in its worker-friendly approach, resource-based learning, and information technology based programmes.

CUC operates on a main campus at Miotso which is near Prampram on the main Accra Aflao road and other six locations. Maheko campus which was the main campus originally has three blocks at separate locations namely, Frank Roberts, Annex B and LT Block. The other campuses include the Dansoman Campus and the Graduate School which also has two campuses one at the National Insurance

Commission (NIC) head office, and also an annex which is located at the Christ Temple of the International Central Gospel Church.

Communication between the above mentioned campuses is via satellite, and through the use of telephones. Each of these campuses is hooked unto a main server at the Main Campus which is at Miotso for Intranet and the Internet services.

4.2 Programmes

4.3. 1 Business Management and Administration

The School of Business Management and Administration (SBMA) offers programmes in Accounting, Human Resource Management (HRM), Banking and Finance, Agribusiness, and General Management. Post-graduate programmes are also offered in these areas. The Agribusiness programme is mounted at Mataheko campus only. Both the Mataheko campus and the Miotso campuses admit undergraduate students in all other business progrmmes.

4.3.2 The School of Theology and Missions

The School and Theology and Missions is located at Dansoman in Accra. The school runs both undergraduate and postgraduate programmes in Theology and missions the Morning, Evening and Weekend sessions.

4.4 Population of the Study

As stated in secion 3.9, 50 questionnaires were given out to the Faculty of SBMA and the STM programmes. Of this number, five were not returned. Ten of the 45 staff

(representing 22.3%) of the respondents were in STM, while 35 were in SBMA. The return rate for the questionnaire was thus 77.7% were in the School of Business. The above figures are represented as a pie chart in Fig 1.

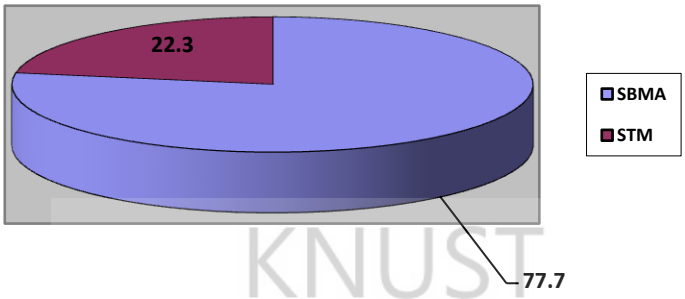

FIGURE 1. RESPONDENTS IN THE SCHOOL OF SBMA & STM

It must be emphasised that the SBMA comprises undergraduate and graduate schools. Although the School of STM was established earlier than SBMA, it has fewer students than the latter. However, it is the same faculty in each school teaches at both undergraduate and graduate levels.

4.5 Publishing at Central University College

The Central University College has its own printing press called the Central University Press, (CUP). Set up in 1998, it was originally meant to undertake scholarly publishing of research findings of the Central University College. So far, the CUP has only published books mainly written by members of staff in such areas as Theology, Economics, English Language and Marketing.

The study found that the manuscripts of books so far published by CUC were mostly submitted to the Press, in soft copy format, mainly on disks. These works were then printed and sent to professional editors to shape them up for publication. The

interviews revealed that attempts by staff who have published works to edit their own works for publication and also publish on their own ("Self Publishing") have not been successful because the works came out with a lot of mistakes, leading to loss of revenue due to reprinting of those same works.

The study shows that publishing a manuscript at the Central University Press has very little application of Information and Communication Technology at all stages of the publication process for manuscripts. Although the books that were examined showed some use of ICTs in processing of the manuscripts, very much needs to be done in the way CUC processes these publications.

The CUP which also doubles as the Publications Unit of the institution also publishes a newsletter called *CUC News* which comes out fortnightly, and *The Pathfinder,* which is the mouthpiece of the university community, twice in a year. The press published its maiden edition of the *Central University College Journal of Arts and Sciences* in 2008.

4.6 Length of Service and Publishing

In the School of Theology, three (30%) of the 10 respondents had been teaching in CUC for 10 years, having worked as full-time and adjunct faculty members over the years. The other 70% had worked for between two to 10 years either as full-time teaching staff or as administrative staff-turned-faculty. In the Business School, five of the 35 (14.3%) respondents had been teaching in the University for four years whilst 30 (66.7%) had been there for between one and nine years. The data shows that though the Central University College is less than 10 years old, some of its academic

staff have served for more than 10 years. This is explained by their presence as staff of the original seminary which later became the university.

In examining the relationship between the number of years employed at CUC and publishing activities, it emerged that two respondents had published eight books between them with one respondent having published five books. Three others had published one book each, making eleven books in all. It was realized from the study that the eight respondents of the Business School had served the university for more than 10 years, were more than 50 years of age and had published a total of seven journal articles between them. The books and articles found in CUC published were published by lecturers in the 40-50 year age bracket. One lecturer had produced five books, another four books, and those in the 40 year age group two books. In all these scenarios, self publishing was the dominant means adopted by these faculty. This suggests that younger lecturers below the age of 50 years had published more books than those who were above 50 years.

Asked whether any of the respondents had any other publications to their name, 17 (representing 48.6%) said they had not published any books while 18 representing (51.4%) of the staff had published books. Out of the 10 respondents in the School of Theology and Missions, four (representing 40%) of respondents had published some books.

In response to whether these respondents had published in other formats like journal articles and papers which had been presented at seminars and conferences, fifteenn of the 45 respondents (representing 33.3%) said they had done so. These papers were

however not available for inspection.

4.7 Communication in publishing before the use of ICTs

On the mode of communication used between the publisher and the respondents who published books and papers before the advent of computers, only one of the respondents had used a fax machine to communicate all the other respondents had made personal contacts with publishers.

Asked how the respondents who published received feedback from publishers, 27 (representing 60%) of the respondents made personal contacts, one made telephone calls, one used a fax machine, while the rest fourteen (representing 31.1%) used ordinary mail. For such it took between two and three months on the average, to get one's manuscript finally accepted for publication, after going through the editorial processes.

To the question how long it took for a manuscript to be published 35 respondents (representing 77.8%) replied that this depends on the publishing house one is dealing with. While thirteen of the respondents mentioned red tapeism as the cause of delay in getting works published, seventeen of the respondents mentioned that publishing is faster if the whole process is funded by the researcher. This confirms Alemna's (2001) assertion that to self publish is easier and faster in Ghana than routing a publication through a publisher.

4.8 The Use of ICTS Now

The study found that all 45 respondents use some form of communication and computer devices in their research work and publishing efforts. As to the year in which respondents started using these facilities, five said they started using computers, scanners and faxes in 1993, 26 (representing 57.8) started using these resources between 1998 and 2002, while five had started using them in 2003. It is worthy to note that the years stated by the respondents as to when they started using ICT gadgets correspond with the time they were employed at the Central University College, implying that most of the teaching staff started using computers when they were employed at Central University College.

Answers to questions on the use of the Internet for publishing and research revealed that in 1998, 28 (representing 62.2) of the 45 respondents were using the Internet to search for information and communicate with their publishers and from 1993, Ten respondents were using the Internet to do so. The other seven also had started using the Internet from the beginning of 2003. The questionnaire revealed that all the respondents had active E-mail accounts. Of these only 17 representing 37.8% of the 45 respondents had used the Internet for research purposes.

As to the frequency of Internet usage, 10 (22.2%) respondents said they accessed the internet everyday, 20 (44.4%) accessed the Internet two to three times a week, 10 access it once a week whilst five accessed the internet fortnightly. This suggests that Internet is fairly used by the study respondents.

Answers to questions on the use of electronic journals revealed that only one

respondent subscribed to electronic journals. The non-subscribers attributed non-use to the high cost involved in assessing electronic journals and indexes and also, that the mode of payment for electronic journals which is by electronic mean makes its usage impossible because they do not use credit cards and other electronic payment systems.

On the choice of journals in which to publish articles and research findings, all the respondents said they placed emphasis on the reputation of the publishers and the frequency of their publication to determine where to go.

All the 45 respondents agreed that articles published electronically could be used for promotion, but none of the respondents had published anything on the Internet. This aspect of publishing which seems popular among the academia in developed countries, seem to be unpopular and non-existent among the teaching staff of CUC. Asked whether they would want to publish on the Internet in the future, all the respondents replied in the affirmative.

On the issue of copyright difficulties in electronic publishing, it was discovered that 29 (64.4%) of the respondents would allow free access to their publications on the Internet. Two were indecisive while the remaining 14 (36.1%) would not allow free access to their publications on the Internet. The implication is that the respondents want to use other authors' publications online but would restrict the use of their own research work. This suggests that these 14 (36.1%) respondents will not indulge in online publishing soon because publishing on the internet does not always restrict access to publications.

None of the respondents owned a website though they all desired to own one in the future. Asked whether they would publish their findings on the sites they own, all the respondents replied in the affirmative. The only obstacle they found in ownership of websites was the high cost involved. Personal websites cost $2,500 to set up and maintain. This is quite expensive when compared with salaries of academic staff which range from $1,500 - $2,500 in CUC.

Central University College does not seem to be an institution that actively supports electronic publishing. This is because 34 or 75.6 respondents would want the university to help encourage staff to publish online an exercise which is beyond their means. This is because of the high cost of electronic publishing in the country and the difficulty in getting access to well established electronic journals without paying.

The respondents' answers to questions on peer reviewing to improve upon papers meant for publishing on the net revealed that 20 (44.4%) respondents would allow peer reviewing of their articles for online publishing whilst 24 (53.3%) were against this. Although they generally agreed peer reviewing of articles is necessary in publishing one's work electronically, there was a general feeling that, their works could be pirated in the process. This shows that some staff of Central University College see peer reviewing as a challenging process in publishing. It can be deduced from the respondents' views that even though Central University College has an ICT policy to guide its programmes and activities, this seems not to be impacting positively on publishing among its academic staff. This is in view of the low level of ICT usage in publishing and conducting Internet search for information to inform teaching and research.

In today's academic circles, it is difficult to delink the academic activities of learning, research, teaching and publishing. However, these activities largely depend on a sound ICT policy promulgated by the institution involved. In some institutions, an academic staff with little or no ICT knowledge cannot perform because the institution applies ICT in every aspect of its academic life. This is where lecture notes and class assignments are given and marked online. The extent to which ICT is applied by the faculty of Central University College in Ghana is the subject of this study which also seeks to find out how ICT policy is interpreted in terms of computer usage for academic publishing. It is important therefore that CUC manages its ICT policy to encourage academic staff to use it to maximum effect.

4.9 Conducting Internet Searching Skills

The study discovered that one of the challenges facing the faculty of CUC involves searching for information on the internet. Even though the university library subscribes to online information services via INASP, PERI and other interlibrary lending services, these services are not popular among the teaching staff of the university. This problem could relate to insufficient publicity of these services or that the staff avoid them because they do not know how to use them. A manual on how to conduct an Internet search could assist faculty in their effort to look for and use information electronically. In pursuance of this view information was sourced from staff on their information seeking behavior which mainly focused on their level of computer literacy, use of the Internet and how they conduct Internet search. The outcome was used to design a manual which can educate a user in the use of the internet.

4.10 Pre Testing of the Manual on How to Conduct a Search

Although the study's emphasis was on teaching staff of the University College, the pre testing of the manual was developed in response to the difficulties CUC staff have with internet usage was extended to include a graduate student from the University of Ghana Graduate School who agreed to work with the manual and six CUC final year undergraduate students who were writing their long essays done with more subjects. This was allowed to test whether findings on the use of the manual could be extrapolated in other environments.

All seven subject respondents were personally guided to use the manual to look for information related to their areas of research. One CUC Lecturer also opted to use the manual.

4.11 The Methodology for Using the Manual

The subjects were first given a copy each of the manual and read to educate themselves on how to conduct a search on the internet. This was followed with questions on the kind of information they wished to look for. Information sought was categorized into two groups, information on literature related to the subject areas under study and information relating to the various topics the students wished to write on. The test began with a discussion of methods of conducting Internet search that the subjects were familiar with and then by the methods recommended in the manual. Both results were then compared to find out which method was more successful.

4.12 Results of the test and future use of the manual

Results from the use of the manual impressed on the users the need to understand the technicalities of conducting searches before undertaking them. The manual educated the users as to the ideal search engines to use and also how to enter key words to get only the results one was expecting. It was clear from the exercise of testing the manual that the same principle of *"garbage in garbage out*" could not be avoided. In the manual aided search, there was a faster rate of getting ideal results from the internet with close relation to subjects being searched for. The activity therefore reduced the incidence of having to scan through results of a search to sieve out those results that are related to one's search.

It can be concluded from the findings of the test that the manual would be an important tool in research in the hands of both staff and students at all levels. The next step is another exercise to make the manual available to a larger audience so as to get feedback on its wide acceptability. When this is done, feedback would be collated and where there are difficulties in its use that would be fine-tuned to make the use of the manual widely acceptable. Once this is done, one can be assured that the manual can be effective at all levels.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

In line with the objective of finding out how ICT is being harnessed within the policy framework of CUC, it was realized that the Ghanaian academic landscape still remains a grey area in terms of ICT use. Efforts are being made to integrate ICTs into the academic landscape through online registration and admission processes for instance, but much remains to be done to tap the advantages of ICT's to computerizing academic work. Though it is good that ICT is incorporated in academic work the study makes it evident that the ICT policy and usage at CUC do not clearly match up. It must be noted that efforts to promote the use of ICT's through the provision of the required facilities is not enough. These facilities ought to be used in order for CUC to reap returns from its investments. The fact that they are not being fully used now makes it imperative for CUC to develop effective strategies for incorporating ICT's in its core business of teaching, research and administration.

5.1 Summary

It emerged from the study that apart from books, the academic staff of CUC's School of Management and Business Administration and School of Theology and Missions have not published enough articles in electronic journals during the period studied. According to the data gathered those who attempted to do so previously were not successful while the few older staff had published a total of 17 books. This trend is

quite discouraging and it sends wrong signals about the research capabilities of the staff of the University.

On the use of the internet in research, the study found that many of the respondents are not skilled users of this facility for research purposes. While some find the Internet useful for Email services, very few use it for literature and baseline data searching. This suggests that the academics have problems using the internet to enhance their research, teaching and publishing activities.

Traditional publishing by teaching staff of the Central University College was found popular with the older generation who had been teaching from the inception of the College. Though some newly recruited staff have started showing signs of publishing they are yet to match up the scale of the older staff. This contradicts an observation by Bakelli (1997) that young researchers publish more than those in the higher age group.

The notion that some of the teaching staff have no skills in the use of computers and their peripherals was also noted with 26 (58.8%) of the respondents do not use ICT devices such as scanners, fax, and external drives for publishing their research findings. Central University College boasts of being an ICT-based instituion while few of its staff use ICT tools "revolution" has brought about as far as ICT usage is concerned, in order to facilitate academic work beyond the checking of electronic mails to effective communication and knowledge sharing between faculty, to connote an ICT-conscious environment, yet as the study rather shows, CUC's computers are hardly used for teaching, research and publishing.

The study found acceptability problems with peer reviewed articles on websites. This is because the challenge is: can a work published on a colleague's website or on one's own website be accepted as a qualified research publication? This question was not fully answered in the study and therefore would need further investigation. There is the need for checks and balances to control the quality and originality of research publications. Where the quality of a publication cannot be assured, the issue of acceptability of self-published research publications could come into question.

The result of the study however reveal the extent to which Internet-based scholarly practice has penetrated the academic community at Central University College. The observation revealed that a large majority of academics in CUC who claim to be competent in Internet use were found to have had no prior formal training and would need further training in order to acquire more knowledge and to sharpen the essential skills to sharpen essential skills in such areas as using File transfer and presenting course description on the Internet. They could also benefit from tutorials on how to publish their research findings on the internet and also using the Internet to deliver lecture notes. In this respect one would understand the impact of ICTs on users in Africa especially in educational settings as Adam, L., and F. Wood (1999: 307) indicate. This is made evident by less than half of the 45 study respondents reporting the use of ICT in their research and publishing activities, and using ICTs to look for information, communicate with others and also in their publishing activities.

In terms of traditional publishing, the study reveals that the 45 respondents had only published 17 books. Some had manuscripts for which they were soliciting funds to get

them published. To have some staff wishing to publish online was evident from the study but that they cannot do this now because they lack the skills needed for electronic publishing.

One good thing noticed from the study was that all 45 respondents were using computers to do research for publication and to send and receive information in particular, by means of E-mail was common. What was absent in the study was the use of electronic databases for research and also subscription for electronic journals.

5.2 Conclusion

The Internet has undoubtedly impacted upon – and continues to affect – the scholarly communication practices and expectations of academic communities. Such possibilities and changed practices provide an opportunity for libraries to re-evaluate their role and position within scholarly communities.

Evidence from the study indicates that publishing trends at the Central University College has not been as busy as one would expect in an ICT-based institution. The ICT tools provided by CUC have had little impact on academic publishing in the two schools of Central University College. It was not clear whether ICT investments had actually been at improving research at the university. This is because of the realization that some of the teaching staff of CUC who are expected to be at the centre of research at the university are almost cut off from the ICT facilities at the university because of lack of skills in the use of the computers.

These days, computers play a major role in publishing. At the Central University College, it was observed that very little publishing being done by the staff of the University because of the difficulties associated with traditional publishing. However, the study also shows that the advent of computers and their widespread availability in CUC should have generated more publications.

The reality is that ICT has not made much impact on academic publishing and research the CUC. The local area network of the university is not very stable beyond the main University Campus. This puts those teaching staff on the Mataheko, Frank Roberts and Miotso campuses and therefore do not have offices at the Mataheko campus of the University at a disadvantage because they do not have easy access to the computers connected to the Internet for communication purposes like those on the Mataheko campus.

In sharp contrast to this, staff at the Mataheko campus have easy access to computers and the Internet in all offices and even support staff who have very little to do with teaching and research have easy access to these resources. This problem is partly to blame for the low use of ICT in teaching and research at the Central University College.

Focusing on the impact of communication technology on research also, it was observed that communication between the six campuses of CUC is also a problem. Communication on each campus (Mataheko, Dansoman, Miotso and Frank Roberts, NIC and Christ Temple) is via telephones. Another problem identitied is the use of the internet for communication. It was established in the study that this mode of

communication is not used at all. Rather, teaching staff use personal contact and where necessary, memos to communicate among themselves.

Overall the study shows that ICT has somehow improved academic publishing of research findings at the Central University College. This is however, picking up very slowly and needs to be improved to enable its benefits to be realized by the university community in general and academics in particular.

5.2 Recommendations

ICTs and publishing especially on the Internet is on the increase each day. Access to computers in our part of the world is on the increase. For research staff not to be left behind, computers and their devices for communication must be at the doorstep of every "*member of the family"* in the academia**.**

In view of the important role publishing and research plays in the work of teaching staff of universities, the following recommendations are made to ensure that ICT resources provided would be used to promote effective teaching, learning and publishing.

1. ICT training for staff shall be provided when the university is on recess, so as to expose more of them to the latest developments in basic computer usage.
2. CUC could initiate policies and programmes that give individual staff opportunity to own either a laptop or desktop computer at subsidized prices to encourage them to use computers to publish their findings online.
3. CUC should make computers and their accessories available on all six

campuses and train the staff to skillfully access the Internet through hands-on workshops and also encourage its use by pushing it as a communication system.

4. CUC should make adequate provision for latest editions of books, e-journals, and bibliographic resources to assist staff to research and publish more books and journal articles.
5. The manual provided as appendix A to this report should serve as a starting point for training CUC staff to upgrade their knowledge and skills in the use of the internet for research.
6. This report shall be made available to management of CUC to serve as reference material on the implementation of CUC's ICT policy. A paper on the subject shall be published to inform the university community and the general public about the findings of the study.
7. In order for the research to benefit the CUC community, permission shall be sought from the department of General Art Studies for the attached Appendix A manual to be made available to staff and students to learn from it. Further more this publication shall also be posted on the CUC website to encourage staff and students to visit the website to the website and by so doing, encourage Internet usage.
8. Findings in this study shall be serialized in the "Pathfinder", the university's magazine to inform the university community the status of ICT usage in CUC.

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APPENDIX A

HOW TO CONDUCT A SEARCH ON THE INTERNET

Every educational institution has a curriculum to guide their activities. The internet is assumed to be learnt once a person becomes computer literate. A lot of Internet users are not aware of the immense benefits it offers to the user. This manual therefore has been designed to provide a self tutorial format that anyone can use to learn how to use the World Wide Web for research purposes.

Conducting a search can be time consuming and frustrating for the non-expert, given the enormous amount of information available on the World Wide Web and the different ways in which information is stored and retrieved. The search process is made all the more difficult because of the large number of search tools, their differing information content and the lack of industry standards. This manual is meant to eliminate problems prompted by the inherent difficulties in searching the World Wide Web for what ever information one needs. To keep the Tutorial simple, the study has unnecessary information eliminated.

Target Readers

This manual is meant to guide all those who are interested in learning to search the Internet and those who wish to teach others how to use the internet for search.

About The Internet

The World Wide Web, also known as WWW or the Web, comprises a vast collection of documents stored in computers all over the world. These specialized computers are

linked to form part of a worldwide communication system called the Internet. When you conduct a search, you direct your computer's browser to go to Web sites where documents are stored and to retrieve the requested information for display on your screen. The Internet is the communication system by which the information travels.

The Internet provides access to a wealth of information on countless topics contributed by people throughout the world. On the Internet, a user has access to a wide variety of services: vast information sources, electronic mail, file transfer, interest group membership, interactive collaboration, multimedia displays, and more. The Internet consists primarily of a variety of access protocols. These include e-mail, FTP, HTTP, Telnet, and Usenet news. Many of these protocols feature programmes that allow users to search for and retrieve material made available by the protocol.

The Internet is not a library in which all its available items are identified and can be retrieved by a single catalogue. No one knows how many individual files reside on the Internet. The number runs into a few billion and is growing at a rapid pace. The Internet is a self-publishing medium. This means that anyone with little or no technical skills and access to a host computer can publish on the Internet. Internet sites change over time according to the commitment and inclination of the creator. Some sites demonstrate an expert's knowledge, while others are amateur efforts. Some may be updated daily, while others may be outdated. As with any information resource, it is important to evaluate what you find on the Internet.You must know that the addresses of Internet sites frequently change. Web sites can disappear altogether so do not expect stability on the Internet.

One of the most efficient ways of conducting research on the Internet is to use the World Wide Web. Since the Web includes most Internet protocols, it offers access to

a great deal of what is available on the Internet. The Tutorial applies to Microsoft Internet Explorer, though some terms used are different. For example, in MS Explorer, *Bookmarks* are called *Favorite Places* and *links* are called *shortcuts*. Online Service Providers such as AOL and CompuServe offer their own versions of browsers, also with some differences in terms. However, all the browsers work essentially the same.

What You Need To Know

As with books or any item in print, one does not have to believe everything read on the Internet to be true or accurate. One must think critically about the material presented by analyzing it to determine the accuracy of what is being read. Most websites are not peer reviewed. Even educational sites might have biases. Teachers rightfully have opinions; we all do. But how could one separate a fact from opinion on a web site? Sometimes web sites do present accurate information, but are still not appropriate for college use.

What to do

Ask yourself who the author of a site is and what is their level of expertise? What pages are given in the links? When was the last page updated? Can information presented in the web site be verified elsewhere? What is the domain? Does the content contain any advertising? The more you know about the subject you are working with, the better you can judge the biases and possible inaccuracies of a website. Consult reference materials for general background information. These can include in-print and online encyclopedias, such as Britannica. (**Note:** Many professors **do not endorse** Wikipedia.)

HOW TO FIND INFORMATION ON THE INTERNET

There are a number of basic ways to access information on the Internet:

1. Go directly to a site if you have the address.
2. Browse.
3. Explore a subject directory.
4. Conduct a search using a Web search engine.
5. Query a service devoted to digitized scholarly materials or books.
6. Explore the information stored in live databases on the Web, known as the "deep Web" .
7. Join an e-mail discussion group or Usenet newsgroup.
8. Subscribe to RSS feeds.

These options are described in the following sections.

Go Directly to a Site if you have the Address.

If you know the Internet address of a site you wish to visit, you can use a Web browser to access that site. All you need to do is type the URL in the appropriate location window. URL stands for Uniform Resource Locator. The URL specifies the Internet address of the electronic document. Every file on the Internet, no matter what its access protocol, has a unique URL. Web browsers use the URL to retrieve the file from the host computer and the directory in which it resides. This file is then downloaded to the user's computer and displayed on the monitor.

The format of the URL: **protocol://host/path/filename** For example:

http://www.house.gov/agriculture/schedule.htm - is a hypertext file on the Web.

ftp://ftp.uu.net/graphics/picasso- is a file at an FTP site

telnet://locis.loc.gov - a Telnet connection

Any of these addresses can be typed into the location window of a Web browser.

Browse

Browsing home pages on the Web is a haphazard but interesting way of finding desired material on the Internet. The creator of a home page programmes each link, in a way one may never know where these links might lead. High quality starting pages will contain high quality links.

Explore a Subject Directory

Universities, libraries, companies, organisations, and even volunteers have created subject directories to catalogue portions of the Internet. These directories are organized by subject and consist of links to Internet resources relating to these subjects. The major subject directories available on the Web tend to have overlapping but different databases. Most directories provide a search capability that allows you to query the database on your topic of interest.

When to use directories - Directories are useful for general topics, for topics that need exploring, for in-depth research, and for browsing. There are two basic types of

directories: *academic and professional directories* these are often created and maintained by subject experts to support the needs of researchers, and directories featured on *commercial portals* that cater to the general public and are competing for traffic. Be sure you use the directory that appropriately meets your needs.

- INFOMINE from the University of California, is a good example of an academic subject directory.
- Yahoo! is a famous example of a commercial portal that includes a subject directory.

Subject directories differ significantly in selectivity. For example, the Yahoo directory does not carefully evaluate user-submitted content when adding Web pages to its database. *It is therefore NOT a reliable research source and should not be used for this purpose.* In contrast, INFOMINE selects only those sources considered useful to the academic and research community. Consider the policies of any directory that you visit. One challenge to this is the fact that not all directory services are willing to disclose either their policies or the names and qualifications of site reviewers.

A number of subject directories consist of links accompanied by annotations that describe or evaluate site content. A well-written annotation from a known reviewer is more useful than an annotation written by the site creator as is usually the case with Yahoo. It is useful to understand that certain directories are the result of many years of intellectual effort. For this reason, it is important to consult subject directories when doing research on the Web.

Conduct a Search Using a Web Search Engine

An Internet search engine allows the user to enter keywords relating to a topic and retrieve information about Internet sites containing those keywords. Search engines are available for many of the Internet protocols. For example, Archie searches for files stored at anonymous FTP sites.

Search engines located on the Web have become quite popular as the Web itself has become the Internet's environment of choice. Web search engines have the advantage of offering access to a vast range of information resources located on the Internet. Many search engines also search multimedia or other file types on the deep Web, often accessible as separate searches. Web search engines tend to be developed by private companies, though most of them are available free of charge.

A Web search engine service consists of three components:

- **Spider:** Programme that traverses the Web from link to link, identifying and reading pages.
- **Index:** Database containing a copy of each Web page gathered by the spider
- **Search engine mechanism:** Software that enables users to query the index and that usually returns results in terms of relevancy ranked order.

Keep in mind that spiders are indiscriminate. Be aware that some of the resources they collect may be outdated, inaccurate, or incomplete. Others, of course, may come from responsible sources and provide you with valuable information. Be sure to evaluate all your search results carefully.

With most search engines, you fill out a form with your search terms and then ask that the search proceed. The engine searches its index and generates a page with links to those resources containing some or all of your terms. These resources are usually

presented in ranked order. Term ranking was once a popular ranking method, in which a document appears higher in your list of results if your search term appears many times, near the beginning of the document, close together in the document, or in the document title. These may be thought of as *first generation search engines.*

A more sophisticated development in search engine technology is the ordering of search results by concept, keyword, site, links or popularity. Engines that support these features may be thought of as *second generation search engines*. These engines offer improvements in the ranking of results. One reason for this is the insertion of the human element in determining what is relevant. For example, Google ranks results according to the number of highly ranked Web pages that link to other pages. A Web page becomes highly ranked if still other highly ranked pages link to them.

All search engines have rules for formulating queries. It is imperative that you read the help files at the site before proceeding. Online tutorials can also help you learn the rules.

Recommended Starting Points:

1. **Start with Google**. This is a famous search engine that ranks pages based on the number of links from pages ranked high by the service. The more highly ranked pages that contain these links, the higher the linked-to page will be ranked. These highly ranked linking pages, in turn, are also determined by the number of highly ranked pages that link to them. The idea here is that a high quality page will be found and linked to from another high quality page. The vast popularity of Google is a testament to the usefulness of this ranking scheme. Google has dubbed this ranking system PageRank.

2. **Another interesting link-ranking engine is Ask.com**. The Ask.com link ranking scheme called ExpertRank, is a bit different from Google's. Ask.com ranks links from pages in the same subject "community" as the topic being searched. The idea here is that people maintaining Web pages on individual topics are experts in this topic.
3. **Ixquick** is a good place to try if your topic is obscure or if you want to retrieve results from a variety of search engines with a single search. This service searches multiple search tools simultaneously and returns your results in a single list that removes the duplicate files. This type of search processing is called meta searching. Even better, Ixquick only returns the top ten relevancy-ranked results from the source search services. This means that you can take advantage of the collective relevancy judgment of many tools at once. Other recommended meta search engines include Clusty and Don Busca.

Query a Service Devoted to Digitized Scholarly Materials or Books

Dot-coms have become interested in offering free searches of the world's literature as found in books and scholarly materials. Once results are found, users can access the material based on its copyright status. Materials out of copyright are generally fully available for viewing and printing, while only snippets of text or abstracts are available for copyrighted works. In either case, these services are opening up an enormous amount of the world's printed material to be freely searched. The potential benefits to the research process are only beginning to be understood.

Two notable sites for book searches are Amazon and Google Book Search. Amazon has its "Search Inside the Book" feature that offers a full text search as well as other features including links to related works and a concordance of the top 100 most common words. Google's service offers books derived from publisher agreements and also from the collections of notable libraries. Google's intention is to digitize all the books in the world.

Scholarly material in the form of journal articles and other similar works are also becoming available to be freely searched. Sites include Google Scholar and Windows Live Search Academic. Google Scholar enhances the research process by allowing users to explore works that cite items listed in your results. Users in academic institutions can often gain access to the full text of these materials. Others can purchase materials of interest. Other services of these types are in the planning stages. They have the potential to turn the Web into a truly significant medium for research.

Explore the Deep Web

The concept of the "deep" or "invisible" Web is a challenging one. This refers to content that is stored in databases accessible on the Web but usually not available via search engines. In other words, this content is "invisible" to search engines. This is because spiders cannot or will not enter into databases and extract content from them as they can from static Web pages. In the past, these databases were fewer in number and referred to as specialty databases, subject specific databases, and so on.

The best way to access information on the invisible Web is to search the databases themselves. Topical coverage runs the gamut from scholarly resources to commercial

entities. Very current, dynamically changing information is likely to be stored in databases, including news, job listings and available airline flights. As the number of Web-accessible databases grows, it will become essential that they be used to conduct successful information finding on the Web.

Other content usually not gathered by spiders includes non-textual files such as multimedia files, graphical files, and documents in non-standard formats such as Portable Document Format (PDF). Google is one of the exceptions here, since it indexes PDF, Word, and other documents in its searchable index.

Content available on sites protected by passwords or other restrictions is also a part of the deep Web. Some of this is fee-based content, such as subscription databases or e-journals paid for by libraries and available to their users based on various authentication schemes.

Keep in mind that many search engine sites and commercial portals feature deep Web content as part of their package of services. This phenomenon falls under the heading of converging content, and is present on nearly all search engines these days. For example, you can visit All the Web and look up news, pictures, video and audio, all outside the purview of a spider- gathered index.

Join an E-Mail Discussion Group

Join any of the thousands of e-mail discussion groups. These groups cover a wealth of topics. You can ask questions of the experts and read the answers to questions that others ask. Belonging to these groups is somewhat like receiving a daily newspaper on topics that interest you. These groups provide a good way of keeping up with what

is being discussed on the Internet about your subject area. Be careful to evaluate the knowledge and opinions offered in any discussion forum.

E-mail discussion groups are managed by software programmes. There are three in common use: Listserv, Majordomo, and Listproc. The commands for using these programmes are similar.

Read Blogs and Subscribe To RSS Feeds

Blogs are a fast-growing phenomenon of the Web. These are sites that present postings by one or more people, to which readers can comment. While many blogs serve the purpose of personal ruminations, others feature commentary and discussion on current events, academic research and professional topics. Good examples of academic-related blogs can be found on George Mason University's History News Network. Technorati is the premier search tool for locating blogs.

It is easy enough to start your own blog using such free services as Blogger and WordPress.

WEB RSS

One of the newer communication technologies on the Web is RSS. This variably stands for Rich Site Summary, Really Simple Syndication, and so on. RSS allows people to place news and other announcement-type items into a simple XML format that can then be pushed to RSS readers and Web pages. Users can subscribe to the RSS newsfeeds of their choice, and then have access to the updated information as it comes in. RSS is used for all kinds of purposes, including the news itself and

announcing new content on Web sites. Many RSS feeds come from the content of blogs.

RSS content may be read by using an RSS reader, or aggregator. This is usually free software that you can install on your computer that posts new items and stores old ones in a graphical interface. An RSS reader is similar to e-mail software in that it displays incoming items and can store content for offline reading. Subscribing to a newsfeed is usually as simple as entering the address of the RSS document. A useful list of RSS readers is available on the site of RSS Compendium. Some Web browsers, such as Firefox and Internet Explorer 7, offer the convenience of built-in RSS readers.

It is also possible to subscribe to and read your own collection of RSS feeds on Web sites devoted to this purpose. Bloglines is one such example. The advantage here is that you can access your RSS feeds from any computer that is connected to the Web.

PRACTICAL STEPS: WEB SEARCH ENGINES

HOW TO FORMULATE QUERIES

There are three steps to a computer database search:

1. Identify your concepts

When conducting any database search, you need to break down your topic into its component concepts. For example, if you want to find information on the sale of Ghana Telecom negotiations between President J.A. Kuffour and the NDC, these are your concepts: KUFFOUR, NDC, GHANA TELECOM.

2. List keywords for each concept

Once you have identified your concepts, you need to list keywords which describe each concept. Some concepts may have only one keyword, while others may have many.

For example:

KUFFOUR

NDC

HOUSE SPEAKER

GHANA TELECOM

SALE NEGOTIATIONS

SALE BATTLE

SALE IMPASSE

SALE DEAL

Depending on the focus of your search, there may be other keywords you would wish to use.

3. Specify the logical relationships among your keywords

Once you know the keywords you want to search, you need to establish the logical relationships among them. The formal name for this is Boolean logic. Boolean logic allows you to specify the relationships among search terms by using any of three logical operators: **AND, OR, NOT.**

Search Statement		**Result of search**
World War I	**AND**	**Files containing both these terms**
World War II		
World War I	**OR**	**Files containing at least one of these terms**
World War II		
World War I	**NOT**	**Files containing the term World War I but**
World War II		**not also the term World War II**

Most search engines offer Boolean searching without mentioning the logical operators by name. For example, you might be asked to list your search terms and choose that All of these terms be searched. This denotes AND logic. Specifying any of these terms denotes OR logic. Most search engines also use a type of implied Boolean logic, in which symbols or spaces are used to denote logical relationships. For example, **+bears +hibernation** denotes AND logic. If you leave out the plus sign (+), most engines will perform an AND search for you.

Certain search engines allow you to use a proximity operator. This a type of AND logic which specifies the distance between words in a source file. For example, Exalead uses the NEAR operator. Consider this search: **Bush NEAR budget.** In Exalead, the two terms must be within 16 words of each other in the source file. Use of this option can help you gain relevance in your search results.

Most Web search engines cannot handle a single search statement that includes all the terms listed in Step 2 above. You may need to repeat your search a few times using terms in different combinations until you get results that are satisfactory. For example, you may start with BUSH, DEMOCRATS, BUDGET NEGOTIATIONS and connect these terms with AND logic. Take a look at your results. If you are not finding what you want, repeat the search with alternative keywords for the budget concept. Your initial results may give you ideas about which new terms to try.

Boolean Searching on the Internet

A Primer in Boolean Logic

The Internet is a vast computer database. As such, its contents must be searched according to the rules of computer database searching. Much database searching is based on the principles of Boolean logic. Boolean logic refers to the logical relationship among search terms, and is named after British-born Irish mathematician George Boole.

On Internet search engines, the options for constructing logical relationships among search terms extend beyond the traditional practice of Boolean searching. This will be covered in the section below.

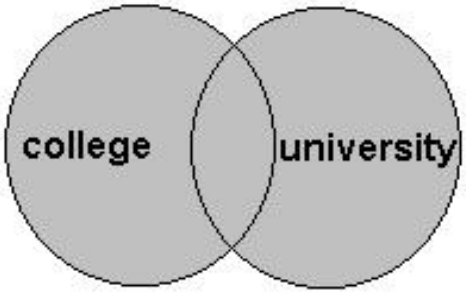
Boolean Logic.

Boolean logic consists of three logical operators:

- OR
- AND
- NOT

Each operator can be visually described by using Venn diagrams, as shown below.

OR



College OR university

Query: I would like information about college.

- In this search, we will retrieve records in which AT LEAST ONE of the search terms is present. We are searching on the terms **college** and also **university** since documents containing either of these words might be relevant.
- This is illustrated by:
- the shaded circle with the word **college** representing all the records that contain the word "college"
- the shaded circle with the word **university** representing all the records that contain the word "university"
- the shaded overlap area representing all the records that contain both "college" and "university"

OR logic is most commonly used to search for synonymous terms or concepts.

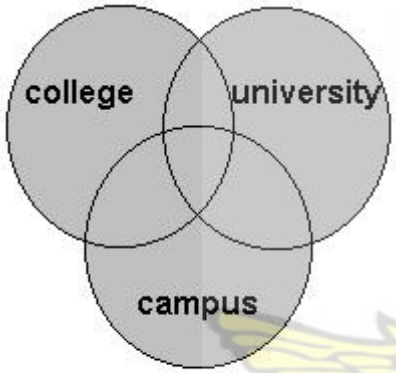
Here is an example of how OR logic works:

Search terms	**Results**
College	396,482

University	590,791
College Or University	819,214

OR logic collates the results to retrieve all the unique records containing one term, the other, or both.

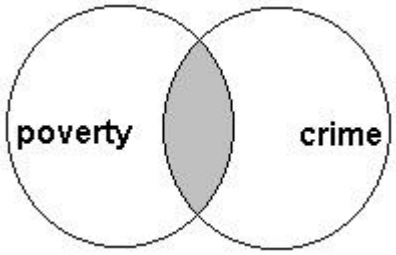
The *more* terms or concepts we combine in a search with OR logic, the *more* records we will retrieve.



For example:

Search terms	**Results**
College	396,482
University	590,791
college OR university	819,214
college OR university OR campus	929,677

AND



poverty AND crime

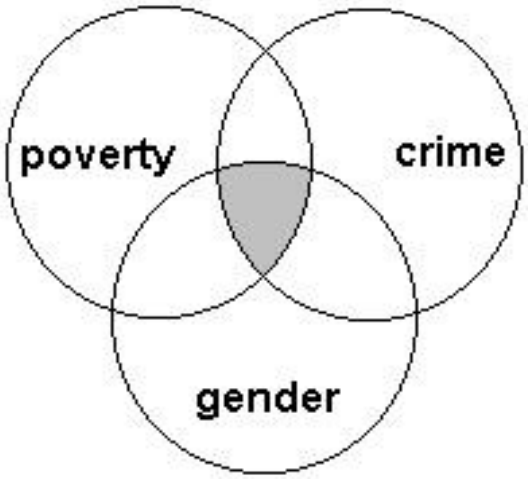
Query: I'm interested in the relationship between poverty and crime.

- In this search, we retrieve records in which BOTH of the search terms are present
- This is illustrated by the shaded area overlapping the two circles representing all the records that contain both the word "poverty" and the word "crime"
- Notice how we do not retrieve any records with only "poverty" or only "crime"

Here is an example of how AND logic works:

Search terms	**Results**
Poverty	76,342
Crime	348,252
poverty AND crime	12,998

The *more* terms or concepts we combine in a search with AND logic, the *fewer* records we will retrieve.

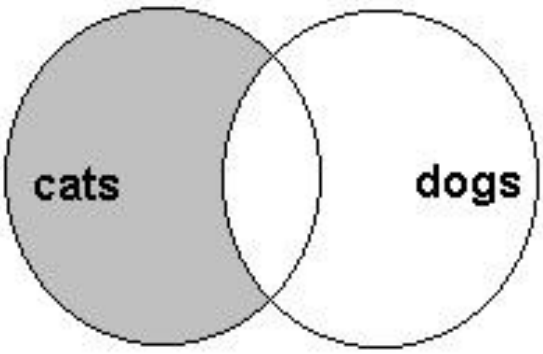


For example:

Search terms	**Results**
Poverty	76,342
Crime	348,252
poverty AND crime	12,998
poverty AND crime AND gender	1,220

A few Internet search engines make use of the *proximity operator* NEAR. A proximity operator determines the closeness of terms within the text of a source document. NEAR is a restrictive AND. The closeness of the search terms is determined by the particular search engine. Google defaults to proximity searching by default.

NOT



cats NOT dogs

Query: I want information about cats, but I want to avoid anything about dogs.

- In this search, we retrieve records in which ONLY ONE of the terms is present
- This is illustrated by the shaded area with the word **cats** representing all the records containing the word "cats"
- No records are retrieved in which the word "dogs" appears, even if the word "cats" appears there too

Here is an example of how NOT logic works:

Search terms	**Results**
Cats	86,747
Dogs	130,424
Cats NOT Dogs	65,223

NOT logic excludes records from your search results. Be careful when you use NOT: the term you do want may be present in an important way in documents that also contain the word you wish to avoid.

Boolean Searching on the Internet

When you use an Internet search engine, the use of Boolean logic may be manifested in three distinct ways:

1. Full Boolean logic with the use of the logical operators
2. Implied Boolean logic with keyword searching
3. Predetermined language in a user fill-in template

4. Full Boolean logic with the use of the logical operators

Few search engines nowadays offer the option to do full Boolean searching with the use of the Boolean logical operators. It is more common for them to offer simpler methods of constructing search statements, specifically implied Boolean logic and template language. These methods are covered below.

If you want to construct search queries using Boolean logical operators, you will need to experiment with search engines and see what happens when you search. You can try some of the search statements shown below.

Examples:

Query: I need information about cats.

Boolean logic: OR

Search: cats OR felines

Query: I'm interested in dyslexia in adults.

Boolean logic: AND

Search: dyslexia AND adults

Query: I'm interested in radiation, but not nuclear radiation.

Boolean logic: NOT

Search: radiation NOT nuclear

Query: I want to learn about cat behavior.

Boolean logic: OR, AND

Search: (cats OR felines) AND behavior

Note: Use of parentheses in this search is known as *forcing the order of processing.* In this case, we surround the OR words with parentheses so that the search engine will process the two related terms first. Next, the search engine will combine this result with the last part of the search that involves the second concept. Using this method, we are assured that the semantically-related OR terms are kept together as a logical unit.

2. Implied Boolean logic with keyword searching

Keyword searching refers to a search type in which you enter terms representing the concepts you wish to retrieve. Boolean operators are not used.

Implied Boolean logic refers to a search in which symbols are used to represent Boolean logical operators. In this type of search on the Internet, the *absence* of a symbol is also significant, as the space between keywords defaults to either OR logic or AND logic. Nowadays, most search engines default to AND. Implied Boolean logic has become so common in Web searching that it may be considered a de facto standard.

Examples:

Query: I need information about cats.

Boolean logic: OR

Search: [None]

It is extremely rare for a search engine to interpret the space between keywords as the Boolean OR. Rather, the space between keywords is interpreted as AND. To do an OR search, choose either option #1 above (full Boolean logic) or option #3 below (user fill-in template).

Query: I'm interested in dyslexia in adults.

Boolean logic: AND

Search: +dyslexia +adults

Query: I'm interested in radiation, but not nuclear radiation.

Boolean logic: NOT

Search: radiation -nuclear

Query: I want to learn about cat behavior.

Boolean logic: OR, AND

Search: [none]

Since this query involves an OR search, it cannot be done with keyword searching. To conduct this type of search, choose either option #1 above (full Boolean logic) or option #3 below (user fill-in template).

3. Predetermined language in a user fill-in template Some search engines offer a search template which allows the user to choose the Boolean operator from a menu. Usually the logical operator is expressed with substitute language rather than with the operator itself.

Examples:

Query: I need information about cats

Boolean logic: OR

Search: Any of these words/Can contain the words/Should contain the words

Query: I'm interested in dyslexia in adults.

Boolean logic: AND

Search: All of these words/Must contain the words

Query: I'm interested in radiation, but not nuclear radiation.

Boolean logic: NOT

Search: Must not contain the words/should not contain the words

Query: I want to learn about cat behavior.

Boolean logic: OR, AND

Search: Combine options as above if the template allows multiple search statements

Quick Comparison Chart:

Full Boolean vs. Implied Boolean vs. Templates

	Full Boolean	**Implied Boolean**	**Template Terminology**
OR	college or university	[rarely available] **see note below*	any of these words can contain the words should contain the words
AND	poverty and crime	+poverty +crime	all of these words must contain the words
NOT	Cats not dogs	cats -dogs	must not contain the words should not contain the words
NEAR,	Cats near dogs	N/A	near

etc.			

* Most multi-term search statements will resolve to AND logic at search engines that use AND as the default. Nowadays most search engines default to AND. Always play it safe, however, and consult the Help files at each site to find out which logic is the default.

Where to Search : A Selected List

Feature	**Search Engine**
Boolean operators	Dogpile | Google [OR only] | Ixquick
Full Boolean logic with parentheses, e.g., *behavior and (cats or felines)*	AlltheWeb Advanced Search | AltaVista Advanced Web Search | Ixquick | Live Search
Implied Boolean +/-	Most search engines offer this option
Boolean logic using search form terminology	Most advanced search options offer this, including: AllTheWeb Advanced Search | AltaVista Advanced Web Search AOL Advanced Search | Ask.com Advanced Search | Google Advanced Search | Yahoo Advanced Web Search
Proximity operators	Exalead | Google [by default] | Ixquick

5.25 Tips on Conducting Searches

1. Read the directions at each search site. The technique for formulating a search depends on the search engine you are using. There is a wide variety of options available among the different search engines.
2. If you have a multi-term search, be sure to determine which type of Boolean logic you should use. For example, a search about the relationship between latitude and temperature can be formulated as: **+latitude + temperature** on many Web search engines in order for AND logic to apply.
3. Include synonyms or alternate spellings in your search statements and connect these terms with OR logic.
4. Check your spelling.
5. Take advantage of capitalization if the search engine is case sensitive.
6. If your results are not satisfactory, repeat the search using alternative terms.
7. Try different sources to diversify your results. Sources can include other search engines and large directories.
8. Experiment with different search engines. No two search engines work from the same index.
9. Try search engines which allow you to search multiple search engines simultaneously. Be aware that you will lose access to advanced query options since not all engines offer them.
10. If you have too many results, or results that are not relevant:
11. Field search
12. Add concept words to your original search.
13. Use vocabulary that is specific to your topic; avoid words with large concepts unless you intend to field search.

14. Link appropriate terms with the Boolean AND (+) so that each term is required to appear in the record. While many search engines do not require this, it doesn't hurt to be on the safe side.
15. Use term proximity operators if they are available to locate documents in which your terms are close together. Exalead is one of the few engines nowadays that offers this.
16. If one of your search terms is a phrase, be sure to enclose it within quotations, i.e., "global warming".
17. Use the Boolean NOT to keep out records containing terms you don't want.

11. If you have too few results:
12. Drop off the least important concept(s) to broaden your subject
13. Use more general vocabulary
14. Add alternate terms or spellings for individual concepts and connect with the Boolean OR
15. Try the option available on some engines to find similar or related documents to one or more of your relevant hits

APPENDIX B

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, DEPARTMENT OF ART EDUCATION. M.PHIL. ART EDUACTION.

QUESTIONAIRE

I am an M. Phil. Student of the Department of Art Education at the KNUST conducting a study on THE ICT REVOLUTION ON THE AFRICAN ACADEMIC PUBLISHING LANDSCAPE; A CASE STUDY OF CENTRAL UNIVERSITY COLLEGE. I would be very grateful if you could fill out this questionnaire for me to assist me in the study. I wish to assure you that, all information given here shall be used solely for academic purposes, and shall be confidential.

1. Year employed at Central University College……..…….
2. Previous place of work if any……
3. Age…….
4. Are you on contract? Yes No ***Please tick***
5. If yes how long is the contract? ……
6. Are you computer literate? Yes No ***Please tick***
7. For how many years?

a. less than 1

b. less than 2

c. above 3 years

8. Have you published in the past? Yes No ***Please tick***

9. How many titles do you have at present? ……

10. In what medium did you publish?

    Please tick

    a. book

    b. journal

    c. paper presentation

    d. others

11. In which format did you present your work for publication the first time?

    a. hand written

    b. typed

12. At present how do you present your wok to a publisher

    a. hand written

    b. typed

    c. soft copy

    d. hard copy

    e. other formats

13. How do you receive feedback from the publishing organization that you contact?

……

……

……

14. At present through which other means do you communicate that is different from the past?

……

……

……

……..……..…..

15. Will you say that the advent of computers improved in a way your research activities? Yes No ***Please tick***

16. What are some of the ICT services today that you use in your research?

……

……

……

……

17. Will you say that these facilities help you much in your research work?

Yes No ***Please tick***

18. How often do you use these facilities?.....

19. Do you have a Personal Computer in the office that gives you access to the internet all the time? Yes No ***Please tick***

20. Are you comfortable with the speed of the internet? Yes No ***Please tick***

21. How often do you use the computer for research and publishing?

    a. once a week

    b. everyday

    c. once a month

    d. other

22. Have you ever published on the internet? Yes No ***Please tick***

23. If No why?

    ……

    ……

    ……

24. If yes. Would you recommend this to other colleagues? Yes No ***Please tick***

25. What is your perception of those who own web sites and publish their research findings on their own?

    ……

    ……

    ……....

26. Will you recommend this approach to other colleagues? Yes No ***Please tick***

27. Do you think peer reviewed articles published this way could be acceptable in publication counts? Yes No ***Please tick***

28. In your candid opinion would you say that you have observed an ICT revolution taking place at Central University College? Yes No ***Please tick***

APPENDIX C

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, DEPARTMENT OF ART EDUCATION. M.PHIL. ART EDUACTION.

QUESTIONAIRE

I am an M. Phil. Student of the Department of Art Education at the KNUST conducting a study on THE ICT REVOLUTION ON THE AFRICAN ACADEMIC PUBLISHING LANDSCAPE; A CASE STUDY OF CENTRAL UNIVERSITY COLLEGE. I would be very grateful if you could fill out this questionnaire for me to assist me to test the efficacy of the manual on how to conduct searches on the internet. I wish to assure you that, all information given here shall be used solely for academic purposes, and shall be confidential.

1. Level /Year of programme at Central University College……
2. Previous place of work if any……
3. Age……
4. Are you computer literate? Yes No ***Please tick***
5. For how many years?
    a. less than 1
    b. less than 2
    c. above 3 years
6. Have you used the internet in the past for your studies? Yes/ No ***Please tick***
7. How often? ……
8. Where do you access the facility?

Please tick

    d. At home
    e. At the University's computer lab

f. At the internet cafe

g. At work

9. What do you use the internet for ?.....

10. How would you rate your skill at conducting searches on the Internet?

h. Perfect

i. Quite perfect

j. Poor

11. Which of the following ICT services do you use today in your coursework? Please tick.

k. Mobile Phones

l. Scanners

m. Fax machines

n. Others please name……

12. Did you find the manual "Conducting searches on the Internet" useful?

13. If yes in what ways?

……

……

……

14. Will you say that the use of the manual has improved your ability to conduct searches on the internet? Yes No ***Please tick***

15. If yes. Why would you recommend this material to other colleagues?

……

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