UNIVERSITY OF GHANA

DEPARTMENT OF INFORMATION STUDIES

PROMOTING INFORMATION LITERACY AMONG UNDERGRADUATE STUDENTS OF ASHESI UNIVERSITY COLLEGE

PRESENTED BY

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DECLARATION

I hereby declare that except for references to other people's works, which I have duly acknowledged, this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

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DATE

DEDICATION

This work is dedicated to my wife, Mrs. Janet Awuni Anafo and my children Fauziya, Abu Zeid and Yasmin.

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CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

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ABSTRACT

In its simplest form, information literacy is defined as the ability to recognize a need for information and from there on, one is able to locate, retrieve, evaluate and use the procured information effectively. The acquisition of information literacy skills is deemed by many as a necessity for the information age and it is termed by many as a life long learning skills. The main objective of the study is to promote information literacy skills among the undergraduate students of Ashesi University College. Questionnaires were distributed to 200 students out of a population of 450 of which 120 responded. The study revealed that most of the students level of information literacy is low based on the fact that they have problems in using Boolean Operators OR, AND, and NOT, also they have problem of using information sources and finally they use the internet without evaluating the authenticity of the web site. Based on the findings, and other conclusions, recommendations are made to the authorities of Ashesi University College on how best to promote and intergrate informatim literacy programme into the curriculum of the university.

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND OF THE STUDY

According to Ashoor (2005), the delivery of information literacy instruction to students is becoming progressively more important due to the proliferation of electronic resources and the increased use of the Internet as an information source. Information literacy is a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." Information literacy also is increasingly important in the contemporary environment of rapid technological change and proliferating information resources. Because of the escalating complexity of this environment, individuals are faced with diverse, abundant information choices--in their academic studies, in the workplace, and in their personal lives. Information is available through libraries, community resources, special interest organizations, media, and the Internet--and increasingly, information comes to individuals in unfiltered formats, raising questions about its authenticity, validity, and reliability. In addition, information is available through multiple media, including graphical, aural, and textual, and these pose new challenges for individuals in evaluating and understanding it. The uncertain quality and expanding quantity of information pose large challenges for society.

The sheer abundance of information will not in itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively. Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content

and extend their investigations; become more self-directed, and assume greater control over

an information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one's knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally (ALA 2006)

Developing lifelong learners is central to the mission of higher education institutions. By ensuring that individuals have the intellectual abilities of reasoning and critical thinking, and by helping them construct a framework for learning how to learn, colleges and universities provide the foundation for continued growth throughout their careers, as well as in their roles as informed citizens and members of communities. Information literacy is a key component of, and contributor to, lifelong learning. Information literacy competency extends learning beyond formal classroom settings and provides practice with self-directed investigations as individuals move into internships, first professional positions, and increasing responsibilities in all areas of life. Because information literacy augments students' competency with evaluating, managing, and using information, it is now considered by several regional and discipline-based accreditation associations as a key outcome for college students (Bundy 2004).

Peters (2007) stated that "information literacy encompasses knowledge of one's information needs and the ability to identify, locate, evaluate, organize and effectively use information to address issues or problems at hand, is a prerequisite for participating effectively in the information society, and is part of the basic human right of lifelong learning". She

teracy has been a key topic in academic libraries for many

[illegible] and bibliographic instructions which started before it

It is a challenge to academic librarians and education in general that there is the need to teach students and the academic community the importance of being able to identify, locate, retrieve, evaluate and use information effectively is necessary while in developing learning techniques which can be used throughout life" .

Head (2008) emphasizes the burgeoning availability of information technology and proliferation of digital information resources have thrown these and other questions into high relief. In the past few years, library research literature has focused on the imperative need for codifying information literacy initiatives, standards, and measures. These efforts have occurred at a time when students are more dependent than ever on search engines and public Internet sites for academic research. Yet, as all of these changes have occurred, one question about information literacy has rarely been addressed in the library literature. How do student conducting academic research actually put their information literacy competencies into daily practice regardless of how well they may (or may not) measure up to the information literacy competency standards set by campus authorities?

Within many organizations the ability to initiate and process change and the capacity to turn new ideas quickly into marketable products or services has acquired a premium. Staff are increasingly required who are multi skilled, have problem solving skills, can deal with less routine tasks, are information technology literate and capable of independent learning. Today's graduates may be the first generation "overexposed" to the huge amounts of information available to them In a perfect world, this would allow students to revel in diversity. However, in the real world, overexposure only underscores the complexity of the information world and highlight inadequacies research skills. If graduates are to prosper in the global village society, it is critical that they be able to locate, evaluate and use

ave significant implications for the education of primary.

Kashorda and Sang 1994).

In Africa, several tertiary institutions in countries such as Kenya, Zambia, Zimbabwe, Botswana, Namibia and Nigeria have developed information literacy programmes. In South Africa, following the Cape Library Co-operative (CALICO) project (Sayed and De Jager, 1997) the INFOLIT project was run to maximize the gains of networking and teach information literacy in the Western province tertiary institutions (Karelse 1996). The INFOLIT program was developed and implemented in 1995, for an initial period of five years, by a consortium of five higher education institutions aiming to promote information literacy in primary and secondary schools, and the universities. The teaching and learning of information literacy in South Africa focused on specific skills such as providing access to databases, web-based interfaces and integrated information literacy within the curriculum. A key part of this program was an investigation of capacities contributing to information literacy across students in the region. Sayed (1998) measured six indicators of students' capabilities: confidence, reading and writing ability, computer confidence, library usage, information needs, and independent learning.

Karelse (2000) draws conclusions from several years with INFOLIT when he captures some of the significant challenges for promoting information literacy agenda: In order for the new information infrastructure to aid development by the people, and for the people, it seems imperative that people's capacities are developed to ensure that they can participate in shaping the development of the global information society. The ways in which curricular are developed in response to this need, and the ways in which educational systems are designed to address the problems of access, equity and redress are central to this challenge. Most importantly, the extent to which academics who wield tremendous power within the system are able to shift their mindset from a notion of 'having to teach their students everything '

the opportunities presented by the formulation of a lifelong

The extent to which academics are prepared to become more reflective and self-conscious of their own ongoing learning will influence their ability to engage with students more interactively to create open spaces into which students can bring their own experiences to create quality learning.

In Ghana, University of Cape coast and the University for Development Studies adopted a course on information storage and retrieval. These universities recognize that proficiency in the appropriate use of information and information technologies is essential to the success of university learning. These skills constitute a lifelong learning objective, and as such the universities acknowledge them to be a core competency required of all its students at the undergraduate levels. The purpose of the Information Retrieval Course is to prepare students to enable them access and retrieve information either manually or electronically. The course contents in these two universities include:

- Libraries, information and the society
- Types of library materials, books and non-book materials
- Methods of acquiring library materials
- Information organization, cataloguing and classification
- Information retrieval, importance of catalogues, indexes and abstracts
- Types and uses of reference materials
- Copyright, photocopying

(Dadzie 2008)

Traditionally, Ashesi, like many institutions, has provided library orientations and tours of its services to new students. These are generally offered outside the context of students' courses or assignments; however, it does not relate students' use of the library with a specific information need. The library therefore expanded its instructional role to include more

1.1 STATEMENT OF THE PROBLEM

Instruction and research in the twenty-first century rely on individual skills and on the best information accessible to students and researchers. Information literacy encompasses more than good information-seeking behavior. It involves abilities to recognize when there is an information need and then to phrase questions designed to gather the needed information. It includes evaluating and using information appropriately and ethically once it is retrieved from any media, be it electronic, human or print. (Kinengyere 2006)

Many students today are over-reliant on search engines such as Google to find information when researching topics. They often overlook quality academic resources available from libraries. This situation creates a new challenge for reference librarians, who must now play a more important teaching role: directing students to high-quality print and electronic sources and educating them on the need to evaluate web resources. Reference librarians need to shift their focus from providing technical assistance on using library resources to user education, thus assisting students in developing information literacy skills to identify when information is needed, and to locate, evaluate and use the needed information effectively. Essentially, we must prepare students to become information literate in the twenty-first century.

Observations over a period of time show that students' use of the library and its resources have gone down. This may be due to difficulties they face in accessing the library's resources especially the electronic databases.

n literacy programme at Ashesi University College Library,

g the library's resources especially the electronic databases.

This necessitated the need for this study, to promote and implement information literacy programme at Ashesi University College.

1.2 PURPOSE OF THE STUDY

The purpose of the study is to determine the level of information literacy and suggest ways of promoting effective and efficient access to information by the undergraduate students of Ashesi University.

1.3 OBJECTIVES OF THE STUDY

The objective was to determine and promote information literacy for users of Ashesi University College:

a. to identify difficulties students have in accessing the library and its resources and advise on how to overcome these difficulties;
b. to look at possible ways of promoting information literacy skills;
c. to advise the administrators on how best information literacy skills can be cultivated and sustained in Ashesi University College;
d. to promote efficient ways of searching for information at Ashesi University College;
e. to assist students get access to needed information efficiently and effectively;
f. to find out wether undergraduate students access and use information ethically and legally
g. to establish a baseline of student skills around which an information literacy program might be built and;
h to make recommendations as to how information literacy programme could be intergrated into the teaching and learning process of the University

The study is restricted to users of Ashesi University College library, which is a key part of Ashesi University College, a young, five year old private undergraduate university located in Accra. The researcher decided to use Ashesi students because; he is a library staff and also with limited timeframe for the research at his disposal, the researcher, therefore, considered Ashesi to be the best institution for his study.

1.5 USEFULNESS OF THE STUDY

The usefulness of this study will be as follows;

To management, library, and students of Ashesi University College since

a it will go a long way to improve instructional programmes currently run by the library for faculty and staff;

b. It would also be useful to other libraries in Ghana which would be considering the application of information literacy programmes in their institutions;

c. the study would serve as the basis for further investigation on this topic or issues raised by this study and finally;

d. the recommendations of this when properly implemented would promote information literacy of Ashesi University College.

1.6 ORGANISATION OF THE STUDY

This research is presented in a format that conforms, to general dissertation structure. The general outline unfolds in a descending order in the paragraph.

Chapter one: This is the general introduction, statement of the problem, objectives of the study, the scope and limitation, usefulness of the study, and organization of the work

...ture on information literacy.

...methodology adopted in arriving at findings.

Chapter Four: Presents and discusses the findings obtained

Chapter Five: Summarizes the findings, as well as makes recommendations

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2.0 Introduction

i Library Instruction

ii. Brief History of Information Literacy

iii. Development of the Concept of Information Literacy

iv. Information Literacy in higher education

v. Assessing Information Literacy

2.1 Library Instruction

Library instruction provides the foundation for the information-literacy movement; therefore it is necessary to look at the former in order to have a context for the latter. A useful context for the information-literacy movement, which is an integral component of this study, is library instruction, sometimes known as bibliographic instruction. Library instruction, usually considered to have developed in the past 150 years, makes it a relatively newcomer in the context of over 2,000 years of library history.

Moreover, the information-literacy movement is a relative newcomer to library instruction, having largely developed during the past 25 years. The focus here is library instruction in academic libraries, with particular emphasis on library instruction in U.S.A and Ghana.

Teasdale and Bonnelly (1998) discussed the impact of the Web on information research and its impact on library instruction at the University of Laval. The authors posit that, during the course of their studies, university students must become proficient in the skills that will enable them to function effectively in an information society.

n (2000), the ability to use information efficiently is now
...val of individuals and organizations. However, what is
commonly referred to as "user training" or "library instruction" is not in step with this reality. To equate information literacy with instruction in the use of specific media or a particular library or a search tool is completely outdated. He believes that information literacy instruction must be founded on "reasonable" intellectual base.

Poirier (2000) goes further in suggesting the expression "informational intelligence". She argues that the concept of informational intelligence, by analogy with emotional or rational intelligence, is not far-fetched. In fact, a comparison of Poirier (2000) and Caron (2000) articles shows that both favour completely redefined approach to information literacy instructions. In Portier's opinion, informational intelligence involves more computer literacy and library research methods. It requires a strategic, problem-solving approach to searching for information, adaptation to the specific challenges posed by new information technologies and critical and metacognitive thinking skills

According to Ohene-Adjei (1984 user education programme at the Balme Library of University of Ghana always suffered low patronage because of insufficient publicity, and, therefore suggested that the programme should be redesigned and improved. Dennis (2004) and Arde-Acquah (2006) indicated that the timing for the programme at the university is inadequate as the programme is run concurrently with registration of students at various faculties, departments and halls of residence. This means that, students might not pay serious attention to it thereby making it ineffective.

Afful-Yeboah (1993) noted that the library orientation and information retrieval course for undergraduate students at the University of Cape Coast has not had the expected impact. The course was started for students at level 300 and she suggested that it should have started at

Boakye (1998) writing about the awareness and use of library collections at the Kwame Nkrumah University of Science and Technology noted students' lack of basic skills in the search for information and use of library resources. He recommended, among others, improvement in teaching and the use of retrieval tools and that the library orientation programme should be made part of the African Studies curricular or become an examinable course for all first year students.

The foundation for information literacy is the broader library-instruction movement, developed over more than 100 years of experimentation and implementation. Change has been forced on library instruction as a result of technological advances, and the next phase is the information-literacy phase.

2.2 Brief History of Information Literacy

Information literacy evolved in the Western World over a long period of time beginning from terms like library orientation, library instruction or bibliographic instruction and user education. According to ALA (1989), In the North American literature on library instruction, the term "bibliographic instruction" seems to have been replaced by "information literacy". This term credited in 1974 to Paul Zurkowski, president of the Information Industry Association. Behrens (1994) and Neely (2002) appear to have entered the vocabulary of library instruction in 1989 with the America Library Association (ALA) publication of the final report of the presidential Committee on Information Literacy. The report provides the following definition: "To be information literate, a person must be able to recognize when

Association of College and Research Libraries ACRL (2000) adopted the definition of the ALA Presidential Committee on Information Literacy when it published the Information Literacy Competency Standards for Higher Education: Standards, Performance Indicators, and Outcomes.The American Library Association was established in 1876 with Justin Winsor as its first President. Winsor "supported the belief that a librarian is an educator and is needed to bring the library and its uses to the students" (Salony 1995).

The last quarter of the 19th century constituted a golden era for library instruction. Not only was instruction seen as an integral component of library services, but it was also seen as a requisite component of an academic environment (Hardesty, Schmitt, and Tucker, 1986). "Historically, library instruction has focused on the undergraduate students and emphasized the development of those bibliographic skills needed to use library resources for completing class assignments". For the most part, library instruction consisted of lectures or of courses that focused on the bibliographic tools needed for research. (ACRL 1999)

In 1971, the Association of Colleges and Research Libraries (ACRL) began the discussions that led to the establishment of what has become known as the Instruction Section of the Association of College and Research Libraries (ACRL) of the American Library Association (ALA) Instruction Section, Association of College and Research Libraries and American Library Association (1999). Project LOEX (Library Orientation Exchange) was established as an "educational clearinghouse for materials used in library instruction" and currently consists of over 650 member institutions around the world Library Orientation Exchange (LOEX 2000). Guidelines for instruction were published by ACRL in 1977 and have been updated by the addition of a Model Statement of Objectives for Academic Bibliographic

sociation of College and Research Libraries and American

[illegible] themselves an attempt to focus on not only the tools of delivery, but also the concepts that supported those tools (Oberman 1996).

While the picture of the evolution and development of information literacy skills painted above is peculiar of United States and North America the leading countries in information literacy skills, research evidence suggests that, in Europe a similar pattern has characterized the development of information literacy skills.

2.3 Development of the Definition of Information Literacy

Bawden (2001) has produced a review article about interpretations of information literacy, and alternative words and phrases that are sometimes used (e.g. information competency, mediacy). The phrase "information skills" (rather than information literacy) is used, for example, by the Standing Conference of National and University Libraries (SCONUL).

Although some people are afraid that learners will be put off by the word "literacy" (since they could be resent to be illiterate), Bawden (2001) shows that information literacy is the most commonly used phrase to describe the concept. In work we have not found that students have problems with the term. Now that it has been adopted by UNESCO in the Prague Declaration and Alexandria Proclamation it seems to be firmly established as the international term to describe this concept.

Much of the literature has been produced by librarians, and there are clear links with earlier discussion and practice of bibliographic instruction and library skills training. Most of the definitions of information literacy have been in terms of information literate person rather than information literacy itself. Carbo (1997) notes that Zurkowski (the president of the US

used the phrase "information literates" in 1974, to identify [illegible] information resources to their work". ACRL (2000) and numerous others quote the American Library Association (1989) saying that: "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information"

Other definitions of the information literate person tend to cover the same elements, but expand on them in one way or another. For example Doyle (1992) defined an information literate person as one who: recognizes the need for information; recognizes that accurate and complete information is the basis for intelligent decision making; identifies potential source of information; develop successful search strategies; access sources of information, including computer-based and other technologies; evaluate information for practical application; integrate new information into existing body of knowledge, and; uses information in critical thinking and problem solving".

Lenox et al (1993) also define information literacy by characterizing the information literate person: one who has the analytical and critical skills to formulate research questions and evaluate results, and the skills to search for and access a variety of information types in order to meet his or her information need.

The Prague declaration (2003) included a definition of information literacy, positioning information within lifelong learning. The declaration further say that information literacy encompasses ones knowledge of information needs and the ability to identify, locate, evaluate, organize and effectively used information to address issues or problems at hand. The prerequisite of this declaration is participating effectively in the information society, and as part of the basic human right of lifelong learning.

Library and Information Professional (CILIP, 2005) says an information literate person knows when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.

From the foregoing, it is clear that while information literacy skills have assumed a prominent position and even permeate strategic thinking at various levels in national governments, there is no agreed definition and a number of people have offered their views of what they think is information literacy.

In this literature review, the researcher has attempted to look at changing definitions of information literacy, brief history of information literacy and changes in collective thinking about library instruction for the benefit of university students.

2.4 Information Literacy in the Higher Education

The researcher thinks that today's students need to be taught how to use the new media to find, retrieve, evaluate and process information became obvious in the earliest stages of the development of an educational framework designed to promote information literacy. Inexperienced users need to acquire the skills that will enable them to make use of information in the context of the education system, in order to cope with contemporary learning challenges. According to the Association of College and Research Libraries' (ACRL,2000) defines "Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information". The same document points out that information literacy are created to reinforce these abilities. They can be included as part of the teaching of an existing course or constitute an independent course in the curriculum. An information literacy programme can also take the form of an online tutorial.

school seniors and colleges "sorely lacked in the skills needed to retrieve, analyse, and communicate information that is available online" and "only 13 percent could be considered information literate."(Head 2008).

The response of the higher education sector to the need for development of information literacy skills in students is perhaps best reflected in the view of Johnston and Webber (2003) who point out that information literacy is a social response to the need for effective use of the huge amount of information accessible in today's information society. As interest in information literacy continues to build, the scholarly discussion has begun to consider how information literacy can be developed using the latest technology to adapt to the diverse student learning styles.

Academic libraries have played an important role in information literacy development, especially in Europe. Information literacy initiatives in higher education have taken a variety of forms: These include stand-alone courses or classes, web-based tutorials, course related instruction, or course integrated instruction. Most authors have the opinion that information literacy programmes be integrated into subject areas. (Joint 1999; and Kemp 2000).

According to Maughan (1994) on Boyer's report in 1987 titled "The Undergraduate Experience in America", popular known as the Boyer Report, gave considerable thought to the role of libraries in addressing the challenges faced by institutions of higher learning. In its initial release, the Boyer report noted: "The quality of a college is measured by the resources for learning on the campus and the extent to which students become independent, self-directed learners. And yet we found that today, about one out of every four undergraduates spends no time in the library during a normal week, and sixty-five percent use the library four

...e gap between the classroom and the library, reported on ... today. Boyer further went on to say that, "having crossed the threshold into the twenty-first century, where do academic libraries stand with respect to assessing information literacy among undergraduates? Much has been written on the concept of information literacy during the past twenty-five years. Recommendations and standards for information literacy have been developed and updated nationally by a variety of professional organizations. Yet, little is known about the extent to which undergraduates meet these standards. Moreover, few librarian authors have written on the topic".

As student support services and faculty as well as librarians are increasingly engaged in teaching the various aspects of information literacy and student work encompasses multi-media-formats and cross-disciplinary research, collaboration between libraries and other groups in the institutions becomes paramount. Susan (2005) draws on experience of working in the new Student Centre for Research, Writing and Information Technology at the Library of Dartmouth College, New Hampshire, on how to approach potential collaborators and stresses the importance of involving students from the start of a project.

In their book, "Information Literacy: Revolution in the Library," Breivik and Gee (1989) emphasized the critical importance of partnerships within colleges and universities in graduating students qualified to be called information literate. The authors mentioned, in particular, the importance of partnerships between the library and classroom instructors, the library and university administrators, and the library and the business community.

Integration of information-literacy components into existing courses is a fairly common method of implementation. Earlham College has a well-known integrated program in existence for a number of years in which librarians and faculty members working together in curriculum development. Though it has encountered some implementation setbacks due to

e University requires each faculty member who proposes a curriculum to answer questions on how that course will address issues of information literacy within the field (Rader 1995).

Hosein (2006) discussed the current library instruction at the University of West Indies in Trinada. According to her, University of West Indies recognizing the importance of information literacy decided to develop a comprehensive information literacy programme for the university. She stated in her article that" a central mission of the University of the West Indies St Augustine Campus is to develop lifelong learners by ensuring that individuals have the intellectual abilities of reasoning and critical thinking as well as being able to construct a framework for learning how to learn".

Kotter (1999), in a comprehensive review of the literature on faculty-library relations, points out the benefits of such relationships, argues that a method for evaluating the relationships needs to be established and suggests that improved relationships would benefit both populations. From the viewpoint of information-literacy instruction, he points out that this kind of partnership offers the possibility of improved instructional design, classroom instruction, and curriculum development.

The role of the librarian in faculty-development efforts is demonstrated by Florida International University's Model for Information Literacy, which is touted as a template for establishing campus partnerships throughout the university. Iannuzzi (1998) argues that librarians should participate in faculty development programs on their campuses, thus developing relationships with faculty members that will lead to implementation of successful information literacy initiatives.

aking in South Africa on higher education after a decade of

transform the teaching and learning practices to be more consistent with other African democratic state. In addition to address setbacks associated with the country's destructive policies of its past, the government has sought to ensure that the higher education institutions improve. The author discusses the progress made by librarians in establishing partnerships with academics to deliver quality education. The paper shows how librarians have developed their conceptions of information literacy education and makes the case that they can accelerate the uptake of information literacy education interventions in the curriculum. (Hosein 2006)

Dadzie (2008) points out that, "librarians have the responsibility to lead the information literacy drive since they have custodial duties of collecting, organizing and providing access to the multiple forms and sources of information in a timely manner so that information is used appropriately". She also stated that "information literacy, though an issue for librarians, is not a library affair and requires partnership with faculty and senior university managers to integrate information literacy into curriculum".

However, Johnson (2000) disagree with many other authors by advocating that information literacy can be treated as a stand-alone discipline of study on its own rights, rather than favouring the curriculum integration model.

There is also the sense that a higher education institution should have as part of its mission the teaching of lifelong learning skills, particularly in the context of an information society, and that one place that those skills may be taught is through the library. (Marchionini 1999).

As distance education expands, there is the need to ensure that students taking advantage of these kinds of offerings have the necessary information-retrieval skills to support their academic endeavors. (Laverence 1997).

mprehensive approach to information literacy approach in ... ...y and Higher Education". The author suggests a pragmatic solution that ensures that every undergraduate is provided information literacy before graduation. The recommended process anticipates an eventual evolution of the academic library into bonafide teaching department."

Palmer and Tucker (2004) describe how information literacy activities were integrated into first year engineering and technology course. Authors concluded that "more time should be directed to developing the concepts of complex reference types that commencing students may not have encountered prior to university studies."

It can also be argued that libraries have a responsibility to teach students how to effectively use available information technologies, and that information literacy programs that incorporate hardware and software components go far in supporting an educational mission of computer literacy like Ashesi University College which is one of the institutions which is technologically advanced. The skills that librarians bring to this kind of instruction argue for their inclusion in instructional-technology support programmes. The information management skills, incorporated with technology-use skills, go far in supporting information literacy goals. (Koltay 1996).

2.5 Assessing Information Literacy-Some Examples

Angelo and Cross (cited in Mitchlitsch and Sidle, 2002, p. 125) define assessment as "the multidisciplinary process of appraising the learning that occurs in the classroom before and after assignments are graded, with feedback used to improve teaching and hence, students learning". Race (cited in Walton, 2005) mentions that assessment is important in learning as it makes students to learn. MCNamara (cited in Walton,2005) also argues that assessment of information literacy programmes breeds feedback, indicates progress or otherwise of the

While there is a body of literature that promotes library instruction or discusses topics to be covered in such programs, few studies examine students' needs and information competencies indepth. Indeed, the number of studies which sought to measure students' information literacy is limited. The article by O'Connor, Radcliff, and Gideon (2001) mentions eight studies involving tests that assess students' knowledge and skills. These tests cover the following elements: Library of Congress Subject Headings, understanding classification systems, locating information sources and library services, using the library catalogue, Boolean operators, developing research strategies and interpreting bibliographic references.

University of California at Los Angeles undertook a project to verify in a more objective manner impressions gained through day-to-day observations and to obtain data on which to base discussions with academic partners. Carevello et al., (2001) stated that "Librarians have long had anecdotal evidence that undergraduate students do not possess adequate information skills for some of the coursework they are required to complete. To obtain an objective measure of their information competence, the UCLA Library's Instructional Services Advisory Committee (ISAC) conducted an assessment project. The main goal of the project was to identify ways to make library instructions more effective at UCLA. A practical objective was to obtain data to use in discussions with faculty about students' information and research skills, their impact of those abilities on students' coursework, and the potential of the library instruction to improve them."

The campus-wide project at California State University (CSU) is also worthy of mention. The complex project is a longitudinal study of information literacy instruction. It is the outcome

mation literacy skills among students at all twenty-three

is conducted in conjunction with Social and Behavioral

Research Institute. (Dunn 2002)

2.6 CONCLUSION

Are students lacking in "information literacy" when they are students? This is the concern of the researcher when he embarked on this research. This brief literature review demonstrates the necessity, even urgency, of verifying the observations of information professionals who work with university students. Librarians are responsible for instructing students in the information research process. Are they mistaken in thinking that students' information skills are sorely lacking? Could their day-to-day observation be so wrong?

If these observations were confirmed in some manner, they could be used to establish institutional procedures. Among these is the need to persuade the university community as a whole of the value of specific information literacy instruction and, more particularly, professors must be convinced that their collaboration is necessary.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This study assesses information literacy skills among students at Ashesi University College in an effort to understand how students acquire and use information. Various methodologies are used to carry out research. These include social survey, historical survey, bibliometric study, citation analysis, case study, and experimental research. This study adopted the social survey methodology to gather the opinions of students on the problem being researched into. The consensus of the opinion of respondents would provide the basis for the implementation of information literacy programme at Ashesi University College Library.

3.1 Research Design

According to Newman (2007), surveys are appropriate for research questions about beliefs or behaviours. They are strongest when the answers people give to question measure variables. Researchers usually ask about many things at one time in surveys, measure many variables (often with multiple indicators), and test several hypotheses in a single survey. An important limitation of survey research is that it provides data only what a person or organizations says, and this may differ from what he or she actually does.

The population of this study was users of the library which are students of the Ashesi University College. The number of students at Ashesi University College was four hundred and fifty (450).

3.3 Sample Size

Sampling is the process of selecting units (such as people and organizations) from a population of interest so that, by studying the sample you can generate information or result that represent the behavior, attitude of the whole population .(Trochim, 2005)

Sampling is very important in social survey because it involves the selection of a representative sample from the population. The findings from the sampled population are used to generalize the whole population. The advantage of using a sample rather than the whole population in a survey is that it is cheaper and faster.

Osuala (1993) sees a sample size of 25% of the total population as adequate for a better result. He adds that the sampling should be done in such a way that each member in a population has an equal chance of being selected, because a good sampling is nearly representative of the entire population. Aina (2004) also buttressed this, by saying that sampling is very essential in survey, especially when the population to be solved, involved a large population. According to him, using a sample, rather than the whole population, has the advantage of being cheaper and faster than using the whole population.

The number of students at Ashesi University College was estimated to be 450. A sample of two hundred students (200) was considered adequate to provide satisfactory results. This is

3.4 Sample Techniques

There are different sampling techniques used in selecting a sample from a population. These are simple random, systematic, stratified, quota, cluster, and purposive sampling. (Saratakos 1994). This study used a nonprobability sampling method. This type of method is often used by librarians to gain insight into variety of issues related to customer satisfaction, library use, and user needs. A common type of nonprobability sampling used by librarians is convenience sampling. This method uses arbitrarily selected (rather than randomly selected) (Skowronek and Duerr 2009). In nonprobability sampling, we recruit whomever we can best access (Whitley, 1996). Although nonprobability can lead to fairly quick recruitment and data collection, a chief drawback of this method is that the sample may not reflect the study population. (Creasey 2005). For this study, the researcher used 200 students who were available in the library as at the time of the study.

The researcher's reasons for choosing convenient sampling technique was that, the university was on recess and most students were out off campus, the researcher had no option but to distribute questionnaires to students who visited the library for their research and for those visiting purposely to read for pleasure. The distribution of questionnaire was done until the required sample size was attained.

3.5 Data Collection Instrument

Collection of data for the study was done by the combination of primary and secondary sources. They enable the researcher to collect data, which is later used to analyze the results. The most common collection tools are questionnaires, interviews, observation, and

3.5.1 Questionnaire

The questionnaire method represents an economical way to gather data. Questionnaires can be quickly scored, everyone is asked the same question in a similar way and you do not need skilled person to administer the surveys or score the data. Questionnaire data is easily expressed in numerical form and thus, represents the most popular quantitative method. (Creasey, 2005)

The questionnaire was made up of closed ended questions. The questions were developed based on the performance indicators and outcome statements of the Information Literacy Competency Standards for Higher education (Appendix A).

The researcher adopted questionnaires because they are cheaper and easy to administer, facilitate the collection of data in a relatively short time, and also guarantee anonymity of the respondents leading to unbiased data.

The researcher spent seven weeks collecting the various data used in the research. Initially, the researcher wanted to collect the secondary data first before distributing the questionnaires. That would have informed the kind of questions to put in the questionnaires. However, because of the difficulties encountered in that effort, both data sets (primary and secondary) were collected simultaneously.

According to Trochim (2005), secondary analysis often involves combining information from multiple databases to examine research questions. For example, you might join crime data with census information to assess patterns in criminal behavior. Secondary analysis has several advantages. First, it is efficient. It makes use of data that was already collected by someone else. It is the research equivalent of recycling. Second, it often allows you to extend the scope of your study considerably. In many small research projects, it is impossible to consider taking a national sample because of the costs involved. Many archives databases are already national in scope, and by using them, you can leverage a relatively small budget into much broader study than if you collected the data yourself.

However, secondary analysis is not without difficulties. Frequently, it is no trivial matter to assess and link data from large complex databases. Often you have to make assumptions about which data to combine and which variables.

3.6 Data Collection Procedure

Data for the study was done by the combination of primary and secondary sources. The secondary source of data emanated from previous works which includes: reports, books, journals, magazines, electronic databases and other related resources. According to Veal (2006), "in undertaking a research it is clearly wise to use existing information where possible, rather than embarking on expensive and time-consuming and new information collection". The data were collected by means of a questionnaire containing 25 closed-type questions, which was distributed by the researchers in person to students.

The questionnaire included a brief description of the study, and statement of anonymity of the respondents

The questionnaire was divided into six sections. Section A, required the respondents' background; section B on how students identify concepts when searching for information; Section C, on search strategy, Section D was on students' ability to define characteristics of scholarly journals; Section E was on how students could distinguish between library catalogue and bibliography database; and finally, Section F dwelt on the ethical and legal use of information.

3.7 Data Analysis and Presentation

Answers to the closed-ended survey question were transcribed and qualified to the degree allowed by the data collected. Data collected was analyzed using the Statistical Package for Social Science (SPSS). The data was first coded, captured and analyzed and the results presented showing the frequencies and percentages of responses given by the respondent in the form of tables. The results have been organized into sections to establish relationships.

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PRESENTATION AND ANALYSIS OF DATA

4.0 Introduction

The researcher administered the questionnaires to 200 students representing 44.4% of student's population of four hundred and fifty (450). It took the researcher more than a month in getting back the completed questionnaire from respondents. After several follow-ups, a total of one hundred and twenty (120) questionnaires were returned by students yielding a response rate of 66%.

The data gathered was analyzed by using the Statistical Package for Social Sciences (SPSS). Simple frequency was used to show the relationships between the variables in the population

4.1 Profile of Respondents

The first three (3) questions of the questionnaire dealt with the general profile of the respondents. In other words, the questions depict the socio-demographic characteristics of the respondents: age group, gender and year group.

Table 1. Frequency Distribution by year of completion of the Respondents.

	Year Group	Frequency	Percentage (%)
Valid	2010	18	15
	2011	51	42.5
	2012	47	39.17
	2013	4	3.33
	Total	120	100.0

[illegible] students are levelled according to the year of completion as [illegible] the table / that eighteen (18) or 15% of the students respondents will complete in 2010. In 2011, fifty one (51) or 42.5% of the respondents will also finish with their programme. Forty seven (47) or 39.17% and four (4) or 3.33% will complete in 2012 and 2013 respectively.

Table 2

Frequency Distribution by age of the respondents

	Age	Frequency	Percentage (%)
Valid	18-21	60	50.00
	22-25	50	41.67
	26-30	30	18.33
		120	100

Table 2 indicates that 60 or 50.00% of the respondents were between ages of 18-21, while 50 or 4.67% 0f the respondents were between the ranges of 22-25. Only 10 or 8.33% of them were between 26-30.

Table 3. Gender

		Frequency	Percentage (%)
Valid	Male	87	72.5
	Female	33	27.5
	Total	120	100.0

This question seeks to find out the gender of the respondents; 87 or 72% of them were male, while 33 or 27.5% of them were female.

Programmes of Respondents

	Programme	Frequency	Percentage (%)
Valid	Business Administration	55	45.8
	Computer Science	40	33.3
	Management Information System	25	20 9
	Total	120	100.0

About 55 or 45.8%, of respondents were Business Administration students, with 25 or 20.9% Management Information Systems students whilst 40 (33.3%) were Computer Science students

4.3 THEME 1: Concept Identification

4.3.0 Introduction

An information literate always demonstrates effective and efficient use of information sources. The questions here were intended to find out how respondents access the needed information effectively and efficiently to accomplish tasks. The questions ranged from respondents' ability to search for specific information, and ability to distinguish between significant concepts and insignificant concepts.

Table 5. Choosing relevant terms in a search statement (Section B, Question 1 at appendix A)

Identification of concepts	Frequency	Percentage (%)
a) Family relations, academic result, primary school	11	9.2
b) Family relations, academic results	11	9.2
c) Effect, family relations, academic results	29	24.1
d) Effect, family relations, academic results, primary school	58	48.3
e) Don't know	11	9.2
Total	120	100.0

Section B, Question 1 seeks to ascertain whether students can identify concepts in question statements Table 5 shows, 11 or 9.2% of the selected b, while 29 or 24.1% choose c, 58 or 48 3% of them also selected d. Table 5 shows that the majority of students do not know how to identify concepts. This is a problem because the inclusion of irrelevant words reduces the search results. The omission of significant words also renders the query too broad and would retrieve irrelevant results. Just nine point two percent (9.2%) chose the best answer. This option includes the three concepts in the original question which is " the effect of family relations on the academic result of primary school student" Majority of respondents about 98 respondents did not chose the right answer.

Using a search engine such as google to search for documents	Frequency	Percentage (%)
a) Impact, depletion, ozone layer, health	51	42.4
b) Ozone layer, health	47	39.2
c) Ozone layer	7	5.8
d) Other (please specify)	11	9.2
e) Don't know	4	3.4
Total	120	100.0

The purpose of the question which is "using a search engine such as google" was to examine students' knowledge of identifying relevant concepts for their assignment or research. 51 or 42.4%, 7 or 5.8%, 11 or 9.2% and 4 or 3.4% of them selected a, c, d and e respectively as their answer to the question. However b, which is the correct answer to the question was selected by only 47 or 39.2% of the respondents. The inclusion of non-relevant words reduces the search results. The omission of significant words renders the strategy too broad and will retrieve irrelevant results. In this case the results show that the majority of respondents 60.6% did not get the right answer that is they were not able to recognize significant words. 39.4% of respondents had chosen the right answer. This results show that students have problems identifying relevant concept for their searches.

Choosing relevant terms in a search statement	Frequency	Percentage (%)
a) Damage to the natural environment, Ghana	29	24.2
b) Damage, environment, measures currently used	18	15.0
c) Protective measures, environment, Ghana	58	48.3
d) Other (please specify)	4	3.3
e) Don't know	11	9.2
Total	120	100.0

This table, as was the case for tables 5 and 6, the researcher's goal was to examine how students select the concepts to use in their search strategy. Another aim was to determine if they are able to distance themselves from the formulation used in the statement of the problem when selecting search terms. The results show that 58 or 48.3% of the respondents did not hold to the wording of question and selected (d), retaining all important concepts. Nevertheless, nearly 47 respondents representing (39.4%) chose an answer in which one of the important concepts was missing.

4.4 THEME 2: Search Strategy

4.4.0 Introduction

Search strategy is the technique or ways or skills used to retrieve relevant documents. It deals with one's ability to identify synonyms, related terms or descriptors used to represent a subject. Some of the search strategies are usage of Boolean Operators and usage of databases

in the Library

Searching for information	Frequency	Percentage (%)
a) The library does not have any documents on this topic	47	39.2
b) You have not used the right words	47	39.2
c) Other (please specify)	4	3.3
d) Don't know	22	18.3
Total	120	100.0

Drawing from the Information Literacy Competency Standards for Higher Education (Appendix A). This question was derived from several standards and several performance indicators for the standards of the Information Literacy Competency Standards for Higher Education. Outcome for these include: "Defines or modifies the information need to achieve a manageable focus." "Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system," and "Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)."

The purpose of this theme was to determine if students were able to identify a common problem researcher's face, namely, that the words they use to describe their topic do not correspond to those employed by the search tool. The identification of synonyms, related terms or descriptors used to represent a subject is an important component of the search strategy and improves retrieval of relevant documents. About almost 47 0r 39.2% e) of them

4.4.1 Boolean Operator "OR"

Table 9. Boolean Operators "OR"

Choosing synonyms in your search statement	Frequency	Percentage (%)
a) AND	8	6.7
b) +	65	54.1
c) OR	29	24.2
d) Don't know	18	15.0
Total	120	100.0

Students were asked to point out whether they knew what Boolean Operators were, but majority of them claimed that they had no idea about what Boolean Operators were, not alone how they operate. An understanding of Boolean logic is essential for developing a sound search strategy. It can be used to formulate a query that reflects the logic of the original question and clearly indicates to the system the relationship between the key words.

The development of search strategies requires several elements, concept identification, and translation of these concepts into keywords and the use of Boolean operators. A good search strategy requires an understanding of the structure and content and fields of library catalogue or database in order to select appropriate search indexes when executing the strategy.

Table 9 indicated that the majority of the respondents failed to choose the correct answer which was c, thus "OR".

To find documents in the library catalogue	Frequency	Percentage (%)
a) By title	7	5.8
b) By subject	15	12.5
c) By author	87	72.6
d) Other (please specify)	4	3.3
e) Don't know	7	5.8
Total	120	100.0

In order to find out how students access documents, the researcher posed a question based on search indexes in a library catalogue.

Table 10 assesses the student's understanding of the search indexes in a library catalogue. The development of search strategies requires several elements: concept identification, translation of these concepts into keywords, and the use of Boolean operators. A good search strategy requires an understanding of the structure and content and fields of library catalogue or database in other to select appropriate search indexes when executing the strategy.

The table above indicates that the majority of the respondent search for documents by author. The best way of searching for a document is by subject since it points out the content of the document.

Table 10 points out that fifteen or 12.5% respondents had the right answer which is (b) representing very low rate thus by subject, that is they would search the subject field to look for documents about an author. The answer (c), search by author, selected by 72.6% of the students, will find text written by John Graham but not documents about him.

Table 11 Searching for Database

Searching a specialized database for documents	Frequency	Percentage (%)
a) An ideogram	4	3.3
b) thesaurus	4	3.3
c) An internet search engine	36	30.0
d) Don't know	76	63.4
Total	120	100.0

The aim of table 10 was to find out whether students are familiar with the concept of a controlled vocabulary tool such as thesaurus. Since a given concept might be represented by different terms, according to the search tool used, it is a good idea to consult the database thesaurus, when is available. The thesaurus facilitates document retrieval by providing a list of preferred terms used to describe a subject in the database. Three percent of respondents had the right answer (b). A large percentage 63.4% said they did not know. This results show that students are not familiar with thesaurus. Many catalogues and databases use controlled vocabulary to describe documents they identify. Students may be less familiar with the concept since they often use internet search engines that did not have thesauri.

Table 12. Frequency Distribution of Respondents who knew how to use Boolean Operator "AND"

Boolean search strategy	Frequency	Percentage (%)
a) Depression and psychotherapy	25	20.8
b) Depression or psychotherapy or antidepressants	12	10.2
c) Depression and psychotherapy and antidepressants	29	24.1
d) Depression	29	24.1
e) Don't know	25	20.8
Total	120	100.0

The aim of question 8 of Theme 2 (Appendix A) was to verify if students understand Boolean logic The purpose of table 12 was to verify if they were familiar with the "AND" operator which has the effect of limiting the search to documents containing all the specified search terms. Average proportion of the students (24.1%) chose the correct answer, which is c: this search strategy will retrieve the smallest number of documents. If we compare the results with those obtained for the question 14, almost the same percentage choose the" AND" operator which appears to be unfamiliar with students. Of the 9.1% who did not choose the right answer, 25 or 20.8% choose (e), which contains only one term, probably making the mistake of thinking that the fewer words there are in a search statement, the fewer results there will be. This strategy, however, will produce many more results than (b). Option (a), chosen by 20.8% of the students, would retrieve most documents, the opposite of what was

4.5 THEME 3: Document Type

4.5.0 Introduction

The purpose of the theme was to see if students knew that an encyclopedia can be used to familiarized oneself with a subject. Whether print or electronic, an encyclopedia is a basic tool that makes it easier to learn about a new field by giving an overview of the topic. Encyclopedia can be general or specialized.

Table 13. Usage of Encyclopedia

Importance of Encyclopedias	Frequency	Percentage (%)
a) A journal	7	5.8
b) An encyclopedia	33	27.6
c) A database	40	33.3
d) A book	15	12.5
e) Other (please specify)	18	15.0
f) Don't know	7	5.8
Total	120	100.0

The percentage of respondents who chose option (b), 33 or 27.6%, indicates that small number of students seem to recognize the usefulness of encyclopedias. This means that majority of students are unaware of their value? Options (a) and (c), chosen by 39.1% of the students were not correct, do not represent the "best" answer: a journal article, (a), generally deals with a specific aspect of a topic and does not provide an overview; a database, (c), is used to retrieve references to various types of documents, but does not include summaries. A

e respondents, may provide an introduction to a subject, but

often contains much less detailed information than encyclopedia.

4.5.1. Usage of Periodicals

Table 14 Usage of Periodical by student respondents.

Finding relevant information	Frequency	Percentage (%)
a) A book	7	5.8
b) A journal	65	54.1
c) An encyclopedia	4	3.3
d) Other (please specify)	33	27.5
e) Don't know	11	9.3
Total	120	100.0

The purpose of the question was to find out if students understand the characteristics of various documents types and, more specifically, if they knew that periodicals contain more recent information than other document types. In order to be able to choose the appropriate document type for their needs, students need to be familiar with the information cycle.

The large majority of the participants, 54.1%, selected the right answer (b). The second most popular was "other", given by 27.5 % of students. Among them, majority indicated "internet". This means that majority of students know that journals contain current information.

Articles published in a scholarly journal	Frequency	Percentage (%)
a) It includes a list of references	11	9.2
b) The research method used is described	4	3.3
c) It has been evaluated by an editorial board before publication	36	30.0
d) None of the above	38	40
e) Don't know	21	17.5

Only 51 respondents representing 42% selected the three answers that characterize the scholarly journal: (a), (b) and (c). Selecting only one or two of the three valid criteria (a, b, c), alone or with an invalid answer, (a) or (e), most of the students demonstrated a partial understanding of the characteristics of the scholarly journal. In a context where the importance of critically assessing information is emphasized, it is important that students be familiar with this characteristic of the scholarly journal and that, they be made aware that, most other types of documents do not share it.

4.6.0 Introduction

One way to test the information literacy levels of respondents is to find out tools that they use in searching for information generally. Knowledge of the right search tools will demonstrate the respondents' knowledge in the access and use of information.

Table 16 Usage of Journal Articles

Finding journal articles in a database	Frequency	Percentage (%)
a) The Library b) Catalogue	4	3.3
c) A database	7	5.9
d) Google	105	87.5
e) Don't know	4	3.3
Total	120	100.0

Table 16 aimed to discover what strategy students adopt when they have to find journal articles. The choice of a search strategy is related to knowledge of the search tools at one's disposal for finding various types of documents. The best answer is (b) because the search tool that enables one to search for journal articles is the database. Only 5.9% of the respondents chose this option. The answer "Google" (c) is also a poor choice: one would still have to browse the Web site to find articles on one's topic. The "Other" category was selected by 3.3% of the respondents.

Table 17. Using Search Engines

Using search engines	Frequency	Percentage (%)
a) The books available in the library	76	63.3
b) Information about companies	4	3.3
c) Other (please specify)	4	3.3
d) Don't know	36	30.1
Total	120	100.0

This theme was developed to verify if students understood that search engines were not appropriate tools for finding documents held by the library.

Sixty-three percent (63.3%) of the respondents recognized that "library books" (a) cannot be found using search engines. Although it is possible to find the library catalogue using search engine such as Google, search engines do not enable one to directly access titles within the catalogue. Although search engines represent many students' first recourse to find information, the response rate for question, Table17 shows that they are aware that search engines have certain limitations. However, this question does not enable us to conclude that the students would have been able to identify the catalogue as the appropriate tool to use to find library books.

Table 18: Use of the Library Catalogue

Use of the Library catalogue	Frequency	Percentage (%)
a) Internet guide	25	20.8
b) Mark Kenney	25	20.8
c) The Microsoft Xbox console	11	9.1
d) answers (a), (b) and (c) are correct	44	36.8
e) Don't know	15	12.5
Total	120	100.0

This table sought to evaluate students' knowledge of the library catalogue, specifically what kind of documents can be found using the catalogue and how to use the different search indexes within it.25 or 20.8% of the respondents gave the right answer, (a). The catalogue does not index individual journal articles, and as a result, one cannot search by author or by article title. The only access point is the journal title. A large percentage of the respondents (36%) believe that they can search indiscriminately by journal title, article title, or author.

Using a Metasearch engine such to find information	Frequency	Percentage (%)
a) Launch a search in many search engines simultaneously	40	33.3
b) Execute a search in all existing web sites	4	3.3
c) Extend the search into foreign language web sites	7	5.8
d) Execute the search in all the database available in the library	4	3.3
e) Don't know	65	54.3
Total	120	100.0

The purpose of this question was to assess students' understanding of one type of internet search tool, Metasearch engines. Since the use of the Internet as a source of information is on the rise, it is becoming increasingly important for students to distinguish between the various categories of Web search tools and to understand the particularities and limitations of each.

Among the possible answers for this question, just 40 or 33.3% of the students chose statement (a) that best characterizes Metasearch engines, "launch a search in many search engines simultaneously". 65 or 54% choose (f), "Don't know". This question demonstrates that students do not necessary have good understanding of this type of tool and may believe that Google do more or less the same thing. These differences, like those between conventional bibliographic tools such as the catalogue and databases, have an impact on the choice and efficiency of a search strategy.

Table 20: Items Found in the Library Catalogue

Items found in the library catalogue	Frequency	Percentage (%)
a) All the titles of the books available in the library	22	18.3
b) All the titles of journals available in the library	4	3.3
c) Don't know	18	15.1
d) (a), (b) & (c)	40	33.3
e) (a) & (b)	36	30.0
Total	120	100.0

The purpose of this question was to determine, using an approach different from that used in question 17, whether students know how to query the library catalogue and for what type of searches it can be used. The respondents could circle more than one answer for this question. The only valid choices were (a) and (b), as the books and journals available in the library are indeed indexed in the catalogue. Just 36 or 30.0 % of the respondents selected only these two options. Among the other respondents, some demonstrated a partial knowledge of what a catalogue contains: 40 representing 33.3% of them selected (a) and (b) and (c).

4.7 THEME 5: Ethical and Legal Use of Information

4.7.0 Introduction

Using questions derived from the Information Literacy Competency Standards for Higher Education (Appendix A) respondents were asked to indicate the circumstances under which other people's works are cited. This question was derived from standard five of the Information Literacy Competency Standards for Higher Education,

Table 21. Type of Citations

Citing other people's work	Frequency	Percentage (%)
a) Miller A.W. 1997	14	11.7
b) Anderson K.H., "Ethical dilemmas and radioactive waste: A survey of the issue." Environmental Ethics, 2(3):37-42	30	25.0
c) Hartley J.T & D.A.Walsh 2000	22	18.3
d) Maccoby E.E. & J. Martin	14	11.7
e) Don't know	40	33.3
Total	120	100.0

While 30 or 25.0% of the respondents selected the correct answer, (b), large percentage (75.0%) were unable to identify the citation associated with a journal article. The results show that it would be very difficult if students are asked to locate documents using a bibliography, almost two-thirds would have difficulties.

4.7.2 Identifying a Bibliography

Table 22. Identifying a Bibliography

Use of bibliographies	Frequency	Percentage (%)
a) The glossary	7	5.8
b) The index	25	20.8
c) The bibliography	44	36.4
d) The table of contents	44	37.0
Total	120	100.0

students know what a bibliography is. It is important for them to understand the added value of the bibliographic references selected by the author. Such references enable them to find other documents on their topic, thus enhance their awareness of existing knowledge. The results show that only 44 or 36.4% of the respondents are familiar with the bibliography as tool for finding other documents. However, the majority of students do not know what a bibliography is. This question rates students' inability to understand what bibliography is.

4.7.3 Evaluating the Quality of an Internet

Table 23. Evaluating the Quality of an Internet

Quality of an internet site	Frequency	Percentage (%)
a) The author is known in the field	7	5.8
b) Responsible for the sites is clearly indicated	18	15.0
c) The site is rapidly accessible	10	8.3
d) Don't know	14	11.8

The researcher wanted to find out if students know what criteria are used to evaluate the quality of a Web site. Today's students often look to the internet to meet their information needs. Since the information on a Website is not always evaluated or checked before it is posted, it is imperative that students be made aware of the need to critically evaluate it Among all the possible options and combinations, 5.8% representing 7 respondents selected the right answer, (a), (b), and (c). The fact that majority of respondents demonstrated partial knowledge in selecting one or two of the relevant criteria, with or without including irrelevant criteria (d), or in selecting all four options, are noted.

a. When I copy word for word a paragraph from the magazine article

b. When I copy word for word a paragraph from a Web page

c. When I write in my own words what is being said in a magazine article

d. When I write in my own words what is being said in a Web page

4.7.4 Acknowledgement of a Reference Source

Table 24. Acknowledgement of a Reference Source

Understanding of plagiarism	Frequency	Percentage (%)
a) When you copy word for word a paragraph from a web page	4	3.3
b) When you write in your own words for what is being said in	4	3.3
c) When you write in your own words what is being said in a web	4	3.3
d) Don't know	29	24.2
(a) & (b)	18	15.0
(c) & (d)	4	3.3
(a),(b),(c)&(d)	50	42.4
(a), (b) & (c)	7	5.2
Total	120	100.0

It is important for students to be familiar with principles of the ethical use of information. Apart from 29 or 24.2% of respondents who indicated that they do not know most of the respondents circled all the correct answers, (a), (b), (c), and (d). The others demonstrated a partial knowledge of when to include bibliographic references or have no idea at all when to quote a source. Students appear to be aware of the need to quote the source when they reproduce text word for word, regardless of whether or not it is a magazine article or Web page.

4.8.1 Ability to Identify Concepts

From the findings, on concept identification, the researcher can deduce that an average of 60% of the student respondents had difficulty identifying significant words, even when their task was facilitated by being present with a choke of possible answers.

The above situation at Ashesi University can be likened to that of Kwame Nkrumah University of Science and Technology as noted by Boakye (1998). According to him, the students lack basic skills in the search for information. Identifying significant words corresponds in a research process to formulating the research topic and identify concept is so relevant to information seeking skills, that is why "O" Conner, Radcliff and Gideon (2001) mentioned eight studies involving tests that assess student's knowledge and skills. These tests according to them, covers the following elements: library of congress subject headings, understanding classification systems, locating information sources, using catalogue, Boolean operators, developing research strategies and interpreting bibliographic references.

A lack of knowledge about the structure and content of the library catalogue (Questions 19 and 21, 21.2% and 30.3% respectively) may also prevent students from finding documents. For example, information specialist frequently observes students searching for magazine or newspaper articles in the catalogue. As this tool does not allow one to search by the author or the title of an article, students may be led to believe that the library does not have the document they want.

4.8.2 Search Strategies adopted by Respondents

The findings showed that most students have problems using the Boolean Operators "OR". Only 39.4% choose the right answer. The researcher has observed that students have

of the problem when they obtain few or no results, and they search terms in a particular context. Systematic approach for constructing searches, narrowing or broadening searches were not evident.

On searching for documents using search indexes within the catalogue, only 12.1% chose the best answer. It is obvious that respondents lacked the skills needed for searching documents. The aim of question seven (7) was to find out whether students are familiar with the, concept of a controlled vocabulary tool such as thesaurus. Since a given concept might be represented by different terms, according to the search tool used, it is a good idea to consult the database thesaurus, when it is available. The findings showed a low rate of 1% indicating respondents' lack of knowledge of the tool used to identify controlled vocabulary. The Thesaurus facilitates document retrieval by providing a list of preferred terms used to describe a subject in a database.

ACRL (2000) and numerous others quote the American Library Association (1989) say that: "To be information literate, a person must be able to recognize when information is needed and have the ability to locate and use effectively the needed information". This statement means that one should have information seeking strategies skills.

Question 22 (with a success rate of 24.2%) concerning the citation corresponding to a periodical article was formulated to verify students' ability to understand and interpret bibliographic references. Failure to understand this variable may result in the inability to retrieve relevant information. A student who is unable to interpret bibliographic references may have difficulties retrieving documents. For example, if one searches the catalogue using the title of a book chapter instead of the title of the book itself, the lack of results may lead one to think that the library does not have the item in question.

Students' often abandon their search when they do not find any relevant information, or they waste time by consulting the wrong type of document (Question 16) or by using search tools ineffectively (Question 17); this leaves less time for reading books and articles and for writing papers. For example, the student who does not understand the utility of the various types of documents and different search tools will spend a significant amount of time searching by trial and error. A basic understanding of the research process would enable them to use a more direct, efficient approach. Searches in different tools (catalogues, databases and the Internet) are not conducted in the same way. These tools do not provide access to the same types of documents, just as different types of documents do not provide access to the same type of information. The information contained in a scientific or scholarly journal article is not the same as the information presented in a popular magazine article. A bibliographic database can be used to identify articles in a periodicals but a catalogue cannot. Failure to understand the characteristics of search tools and the different types of documents wastes time and produces disappointing results.

The first consequencies of poor information research skills-few or no relevant documents being found and time wasted due to inefficient search tools and document types, and the inability to read a citation. The latter two consequences-too many or few documents being found-result, from difficulties in identifying appropriate concepts and in developing a search strategy. Students may be frustrated if few or no documents are found or feel overwhelmed if they find too many documents, some of which are irrelevant.

These two consequences often result from inappropriate concept identification and a deficient search strategy. Question 1 (significant words) and 10 (Boolean operator "OR" touch on these skills

Once the need for information has been recognized, the next step is to state the problem and identify the concepts. If the concept identification step is not mastered, the result may be (a), a reduced number of hits because of the inclusion of non-significant terms, such as the word "effect", or (b), a large number of irrelevant hits because significant words were omitted, such as the concept of "primary school".

But just as it is essential to use significant words to obtain satisfactory search results, thorough understanding of how to use Boolean operators within specific search tools is also important. In Question 10, where students were asked to select the Boolean operator that would retrieve the most documents, only24.2% gave the right answer; the use of another Boolean operator could only result in fewer documents being retrieved.

4.8.5 Utilisation of Information source- Document type

Theme 3, Document Types: Question 14 deals with using an encyclopedia to become familiar with a topic and Question 15 is about finding recent information about drug abuse. In the first case (Question 14), on the issue of selecting document types likely to provide the required information, the findings showed that, only 27.6 % seemed to recognize the usefulness of encyclopedias whilst others were unaware of their value. Document types include encyclopedias, dictionaries, directories, monographs, magazines or newspaper articles, government publications, statistical data, theses, conference proceedings, statutes, standards, and patents.

they can trace information from, in other words, they are documents which are consulted for information. Encyclopedia is an information source.

The study indicated that small number of the students seem to recognize the usefulness of encyclopedias. There is therefore the need for the library staff to be given ample time to orientate the students on the usefulness of information source because according to Dadzie (2008), librarians have the responsibility to lead the information literacy drive since they have custodial duties of collecting, organizing and providing access to the multiple forms and sources of information in a timely manner so that information is used appropriately.

On the part of periodicals as one of the document types, majority of respondents (54.1%) representing 65 respondents choose the right answer which indicates that, they know that periodicals contain more recent information than other document types. The second case answer (Question 15), the answer (e), "other", was the second most popular answer: respondents (27.5%) representing 33 respondents specified "Internet".

4.8.6 Usage of Search Tools

According to Doyle (1992), an information literate person is one who recognizes that accurate and complete information is the basis for intelligent decision making; identifies potential source of information; develop successful search strategies; access sources of information, including computer-based and other technologies; evaluate information for practical application, integrate new information into existing body of knowledge and uses information in critical thinking and problem solving.

The above definition means that an information literate person should be equipped with the requisite skills that will enable him or her to access the needed information, but the study

not conversant with the search tools. Some students have

OPAC in their own university library and that of other

libraries

From the findings, a large majority of respondents did not know how to search for information from the library catalogue. Students failed to distinguish between library catalogue and bibliographic database. Information gathered from the findings reinforces the idea that, some students lack information literacy.

The catalogue is the search tool that enables library users to find documents available at their university, whether in print, audio-visual or electronic format. It is therefore essential that students have good understanding of this tool.

4.8.7 Ethical and Legal Use of Information

Ashesi University College students relied heavily on the internet for obtaining information as compared to other sources. The researcher wanted to find out if students can be able to evaluate the quality of an internet site. It was therefore realized from the findings that students just use internet without evaluating the authenticity of the websites they use. Majority of respondents could not give the right answer; only 6.1% had the best answer.

There was also the need to assess students' knowledge on how to acknowledge the information they use. The purpose of the question on acknowledgement of a reference source was to see if students know when to include reference to the source of the information used. When repeating someone's words or opinions it is important to mention the author of the original text so the reader may refer. Writing in 1985, Breivik talked about legal and ethical issues relating to information use only in the context of citizenship. Doyle (1997) reinforced

supporting good citizenship that information literacy skills would serve to support students' developing role as a good citizen.

The results of the findings showed that students had difficulty identifying the citation to a journal article, recognizing when to cite a source and evaluating information found on the internet. Majority of students choose the right answer which stands as (42.4%), though student participants in the study appear to have a fundamental understanding of legal and ethical behavior as it relates to information use. This is due partly to Ashesi's policy of ensuring students take ethical use of information seriously which is embodied in the Students Handbook. It would be beneficial for the university library to reinforce that behavior.

While the questionnaire dealt with a limited number of bibliographic research skills, it is clear that information literacy competencies go beyond this. It may be necessary to follow Poirer's lead (2000) and not limit instruction to computer skills and library research methods. Also, as discussed in the literature review, the researcher support the approach of Caron (2000) who points out that the survival of individuals and organizations now depends on their ability to use information effectively.

4.8.8 Results by Theme

To "determine students' information literacy skills in order to provide more appropriate services", the researcher considered it important to assess students' knowledge of information research process.

In order to better understand the strengths and weaknesses of the 120 students who participated in this survey, the results for each variable and theme are presented in the following.

me suggests that the indicators (variables) are discriminant. However, the choice of answers may have influenced the results. In spite of this, the table of results by theme signals that students of Ashesi University College had only partial understanding of information literacy skills.

Weaknesses were noted in students' knowledge on research skills, from identifying the concepts to using the results. These weaknesses varied according to the variable examined and in proportion to the number of questions included. Some of the consequences of poor research skills have already been discussed. Although we may be surprised that students have difficulty identifying concepts and understanding the role of Boolean operator and natural language, it is even more startling that they do not know what a catalogue is and are unable to recognize the characteristics of a scholarly journal. The fact that only a very small percentage of students were able to correctly answers the two questions that focused on these variables, 21% and 30.1% respectively, is indicative of a serious problem that requires attention.

Since undergraduate students of Ashesi University College do not appear to understand or have not mastered information literacy skills, does the university, as an institution of higher learning in what is now called the "information society", have a duty to educate students in the use of information? In a knowledge- based economy, can it take the risk of training professionals who are incapable of locating, evaluating, and using information effectively? At the moment numerous observations lead the researcher to believe that such is the case for many of our university graduates: this could be the subject of another research. The researcher would like to draw the reader's attention to the recommendations that follow. The primary aim of the researcher is to promote awareness at the institutional level, or better yet, at the level of Ashesi University College as a whole, that students should "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information". (ALA 1989)

problem-solving approach to searching for information. This approach involves adapting to the cognitive challenges of new information technologies and requires critical and metacognitive thinking. (Poirer 2000)

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes major findings of the study and provides conclusions and recommendation.

As stated in the introduction, the objective of this study was to assess students' of Ashesi University College information literacy skills: to find out the information literacy skills of undergraduate students ; to find out how students of Ashesi University College search for information; to ascertain whether students use information effectively and efficiently for their research; to establish a baseline of student skills around which an information literacy program might be built and; to make recommendation as to how information literacy programme could be integrated into the teaching and learning process of the University.

5.1 Summary of the Findings

Ashesi University College is one of the private university colleges in the Greater Accra region of Ghana. The study seeks to sought out how equipped the students were in terms of information literacy.

The data collected and analyzed on this study show that students have little knowledge on how to identify concepts so that the relevant information could be obtained.

The study revealed that most of the respondents do have problems using Boolean operators "OR", "AND" and "NOT". In other words, the majority of the student respondents lacks the idea of narrowing and broaden hence unable to access relevant information

It emerged also from the study that the students of Ashesi University relied heavily on the internet for obtaining information, compared to other sources. However, it was realized from the findings that students just use the internet without evaluating the authenticity of the websites they use.

Also the study revealed that most respondents do not know what kind of documents can be found using the catalogue. In addition, a large number of respondents do not know what information a catalogue contains.

5.2 Conclusion

Information literacy is an important component of any university library system because of its role in academic achievement and lifelong learning. Consequently, it is argued that a deficiency in information literacy skills has a negative impact on academic achievement, as well as personal and professional development.

It can also be concluded that the majority of the students are not able to access relevant information because of lack of skills in terms of concept identification, search strategies, information sources, proper use of library catalogue and evaluation of information obtained on the internet.

It is a fact that these deficiencies on the part of the majority of the students of Ashesi University College could negatively affect the teaching and learning process. Also looking at the unsatisfactory nature of students' level of information literacy, the researcher believes that there is the need for the introduction of information retrieval as a course in the university.

According to UNESCO (2008), information literacy empowers people in all works of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. In view of the above assertion, it is recommended that:

1. Information literacy should be incorporated in the university curricular in such a way that every student of the college would undergo such a program.

2. It is also recommended that the executive team of Ashesi University should influence attitudes, policies and methods which foster information literacy education. In other words, the executive team should commit itself to providing the infrastructure necessary for the implementation of information literacy program on campus.

3. Another recommendation is that students' learning advisors and subject advisors should encourage students under them to cultivate and sustain the interest in undertaking information literacy program.

4. The next recommendation is that the university library should be adequately staffed and funded so that librarians would assist students to search for information electronically.

5. Lectures should integrate information literacy assignments into the teaching and learning process.

6 The nature and range of resources and media which need to be available and accessible should match with the number of students in the university.

n of the library, "Friends of the Ashesi University College Library" should be formed. This Association should have as members the librarian, the library staff, retired librarians, lectures, representatives from the media houses, students and people who will use their money, time and their knowledge to fight the cause of the Ashesi University College library.

8. It is again recommended that periodic workshops, presentations and one-on-one consultation should be held for students.

9 It is again recommended that, library orientation held for first years should be intensified and also made compulsory for all students.

10. Finally, the assessment of students should include how to integrate library usage into their learning process.

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Questionnaire on Information Literacy

Dear Respondents,

This instrument is used to solicit data from you in order to carry out a study on **'promoting information literacy among undergraduate students of Ashesi University College".** The researcher is an MA library studies student of the Department of Information Studies of University of Ghana and this research work constitutes the thesis component of the entire course. Be assured that responses provided by you would be used strictly for academic purposes and besides your identity would not be disclosed. As a result, feel free to provide clear, accurate and objective answers to the questions in this questionnaire.

The questionnaire covers a variety of topics concerning how you look for information for assignment or essay.

The questionnaire is a closed - ended question. Please follow the instructions at each section.

God richly bless you.

SECTION A-BIODATA

For questions 1 to 5, TICK ONLY ONE ANSWER

Other (please specify)

1) Age group

16 - 18 ☐

19 -21 ☐

22 - 30 ☐

31 - 40 ☐

2) Gender:

Male ☐

Female ☐

2012 ☐
2011 ☐
2010 ☐

4) Stream of the degree enrolled in:

Business Administration ☐
Computer science ☐
Management information system ☐

5) This semester:

I have attended classes on finding and using information ☐
I did not attend classes on finding and using information ☐
Don't know ☐

SECTION B

THEME 1: CONCEPT IDENTIFICATION

1. You must use a psychology database to find information on *"The effect of family relations on the academic result of primary school student"*, which combination of words will you use?

a) Family relations, academic result, primary school
b) Family relations, academic result
c) Effect, family relations, academic results
d) Effect, family relations, academic results, primary school
e) Other (please specify);
f) Don't know

2. Using a search engine such as Google to search for documents on" *the depletion of the ozone layer and the impact on health"*, you use the words;

a) Impact, depletion, ozone layer, health
b) Ozone layer, health

e) Other (please specify)

f) Don't know

3. You must make an oral presentation on the topic" *measures currently used across the country to decrease damage to the natural environment*". Among the following choices, which one describes best the ideas contained in your subject?

a) Damage to the natural environment, Ghana

b) Measures currently used, environment, country

c) Damage, environment, measures currently used

d) Protective measures, environment, Ghana

e) Other (please specify)

f) Don't know

THEME 2: SEARCH STRATEGY

4. You have used the words "*business letters*" *in a library catalogue search.* No document is found by the search. What do you conclude?

a) The library does not have any documents on this topic.

b) You have not used the right words.

c) All documents on this topic are already on loan.

d) The system is down

e) Other (please specify)

f) Don't know

5 In order to find more documents on your topic you can include synonyms in your search statement. To combine those synonyms in your statement, you can use;

a) AND

b) +

c) NOT

d) OR

6. To find all the documents about *John Grisham* in the library catalogue, you would do a search;

a) By title
b) By publisher
c) By subject
d) By author
e) Other (please specify)
f) Don't know

7. When searching a specialized database for documents on your subject, it is recommended to use terminology specific to the database. To identify these terms you would consult;

a) An ideogram
b) A dictionary
c) A thesaurus
d) An internet search engine
e) Other (please specify)
f) Don't know

8. You have to write a paper on the "*treatment of depression*". Which search strategy would find the least number of documents?

a) Depression and psychotherapy
b) Depression or psychotherapy or antidepressants
c) Depression and psychotherapy and antidepressants
d) Depression
f) Don't know

9. To become familiar with a subject about whom you know little first, you consult:

a) A journal
b) An encyclopedia
c) A database
d) A book
e) Other (please specify)
f) Don't know

10. To find the most recent information about drug abuse, you would consult:

a) A book
b) A journal
c) An encyclopedia
d) A dictionary
e) Other (please specify)
f) Don't know

11. Which is the following best describe(s) articles published in a scholarly journal?

The information is written for the layperson

a) It includes a list of references
b) The research method used is described
c) It has been evaluated by an editorial board before publication
d) Don't know

THEME4: SEARCH TOOLS

12. If you want to find journal articles about *"The popularity of video games"* you will search in;

a) The library catalogue
b) A database
c) Google
d) The journals in the library
e) Other (please specify)
f) Don't know

a) The books available in the library
b) Biographical information about famous people
c) Merchandise catalogues
d) Information about companies
e) Other (please specify)
f) Don't know
g)

14) In order to find more documents on your topic you can include synonyms in your search statement. To combine those synonyms in your statement, you can use:

a) AND
b) -
c) NOT
d) OR
e) Other (please specify)
f) Don't know

15) You have found a book that is right on your topic. Which section of the book will you consult to find other documents on the topic?

a) The glossary
b) The index
c) The bibliography
d) The table of contents
e) Other (please specify)
f) Don't know

a) By title

b) By publisher

c) By subject

d) By author

e) Other (please specify)

f) Don't know

17) When searching a specialized database for documents on your subject, it is recommended to use terminology specific to the database. To identify these terms you would consult;

a) An ideogram

b) A dictionary

c) A thesaurus

d) An internet search engine

e) Other (please specify)

f) Don't know

18) You must make an oral presentation on the topic" *measures currently used across the country to decrease damage to the natural environment*". among the following choices ,which one describes best the ideas contained in your subject?

a) Damage to the natural environment, Ghana

b) Measures currently used, environment, country

c) Damage, environment, measures currently used

d) Protective measures, environment, Ghana

e) Other (please specify)

f) Don't know

should read an article published in the November 2001 issue of [illegible] console", by Mark Kenney. To check the availability of this article at the library, you search in the catalogue under:

a) Internet guide
b) Mark Kenney
c) The Microsoft Xbox console
d) answers (a), (b), and (c) are correct
e) Don't know

20. Using a Metasearch engine such as MetaCrawler, it is possible to:

a) Launch a search in many search engines simultaneously
b) Execute a search in all the exiting Web sites
c) Extend the search into foreign language Web sites
d) Execute the search in all the database available in the library
e) Other (please specify):
f) Don't know

21. some of the items that can be found in the library catalogue include:

a) All the titles of the books available in the library
b) All the titles of the books available on the market
c) All the titles of articles found in the journals available in the library
d) All the titles of journals available in the library
e) None of the above
f) Don't know

THEME 5: ETHICAL AND LEGAL USE OF INFORMATION

22. Which one of the following citations refers to a journal article?

a) Miller, A.W (1997). *Clinical disorder and stressful life even* Madison, C.T. International University Press.

b) Anderson. K. H."Ethical dilemmas and radioactive waste: A survey of the issue."*Environmental Ethics, 2(3)*:37-42

c) Hartley, J.T. &D.A.Walsh. (2000)."Contemporary issues and new directions in adult development of learning and memory", in I. W Poon (ed.), *aging in the*

23. You have found a book that is right on your topic. Which section of the book will you consult to find other documents on the topic?

a) The glossary
b) The index
c) The bibliography
d) The table of contents
e) Other (please specify)
f) Don't know

24. Some of the characteristics used to evaluate the quality of an internet site are that:

a) The date of the books available in the library
b) The author is known in the field
c) Responsibility for the sites is clearly indicated
d) The site is rapidly accessible
e) None of the above
f) Don't know

25. You found a magazine article and a Web page presenting different views on a current issue. You want to use this information to write your paper. In which case(s) do you need to include a reference to the source of information?

a) When you copy word for word a paragraph from a magazine article
b) When you copy word for word a paragraph from a Web page
c) When you write in your own words for what is being said in a magazine article
d) When you write in your own words what is being said in a Web page
e) In none of the above cases
f) Don't know

INFORMATION LITERACY COMPETENCY STANDARDS FOR HIGHER EDUCATION

Standard One

The information literate student determines the nature and extent of the information needed.

Performance Indicators:

a. The information literate student defines and articulates the need for information.

Outcomes Include

1. Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need
2. Develops a thesis statement and formulates questions based on the information need
3. Explores general information sources to increase familiarity with the topic
4. Defines or modifies the information need to achieve a manageable focus
5. Identifies key concepts and terms that describe the information need
6. Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information

b. The information literate student identifies a variety of types and formats of potential sources for information.

Outcomes Include

1. Knows how information is formally and informally produced, organized, and disseminated
2. Recognizes that knowledge can be organized into disciplines that influence the way information is accessed

3 Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)

4 Identifies the purpose and audience of potential resources (e.g., popular vs. scholarly, current vs. historical)

5. Differentiates between primary and secondary sources, recognizing how their use and importance may vary with each discipline

6. Realizes that information may need to be constructed with raw data from primary sources

c. The information literate student considers the costs and benefits of acquiring the needed information.

Outcomes Include

1. Determines the availability of needed information and makes decisions on broadening the information seeking process beyond local resources (e.g., interlibrary loan; using resources at other locations; obtaining images, videos, text, or sound)

2. Considers the feasibility of acquiring a new language or skill (e.g., foreign or discipline-based) in order to gather needed information and to understand its context

3. Defines a realistic overall plan and timeline to acquire the needed information

4. The information literate student reevaluates the nature and extent of the information need.

Outcomes Include

1. Reviews the initial information need to clarify, revise, or refine the question

2. Describes criteria used to make information decisions and choices

Standard Two

The information literate student accesses needed information effectively and efficiently.

Performance Indicators:

a. The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.

Outcomes Include

1 Identifies appropriate investigative methods (e.g., laboratory experiment, simulation, fieldwork)

2. Investigates benefits and applicability of various investigative methods

3. Investigates the scope, content, and organization of information retrieval systems

4. Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system

strategies

Outcomes Include

1. Develops a research plan appropriate to the investigative method
2. Identifies keywords, synonyms and related terms for the information needed
3. Selects controlled vocabulary specific to the discipline or information retrieval source
4. Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)
5. Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters
6. Implements the search using investigative protocols appropriate to the discipline

c. The information literate student retrieves information online or in person using a variety of methods.

Outcomes Include:

1. Uses various search systems to retrieve information in a variety of formats
2. Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
3. Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery, professional associations, institutional research offices, community resources, experts and practitioners)
4. Uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information

d. The information literate student refines the search strategy if necessary.

Outcomes Include:

1. Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized

[illegible] information retrieved and determines if the search strategy should be

3 Repeats the search using the revised strategy as necessary

e. The information literate student extracts, records, and manages the information and its sources.

Outcomes Include

1. Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., copy/paste software functions, photocopier, scanner, audio/visual equipment, or exploratory instruments)
2. Creates a system for organizing the information
3. Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources
4 Records all pertinent citation information for future reference
5. Uses various technologies to manage the information selected and organized

Standard Three

The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

Performance Indicators:

a. The information literate student summarizes the main ideas to be extracted from the information gathered.

Outcomes Include

1 Reads the text and selects main ideas
2. Restates textual concepts in his/her own words and selects dataaccurately
3. Identifies verbatim material that can be then appropriately quoted

b. The information literate student articulates and applies initial criteria for evaluating both the information and its sources.

Outcomes Include

1. Examines and compares information from various sources in order to evaluate reliability, relevance, and point of view or bias
2. Analyzes the structure and logic of supporting arguments or methods
3. Recognizes prejudice, deception, or manipulation
4. Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information

c. The information literate student synthesizes main ideas to construct new concepts.

Outcomes Include

1. Recognizes interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence
2. Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information
3. Utilizes computer and other technologies (e.g. spreadsheets, databases, multimedia, and audio or visual equipment) for studying the interaction of ideas and other phenomena

d. The information literate student compares new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.

Outcomes Include

1. Determines whether information satisfies the research or other information need
2. Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
3. Draws conclusions based upon information gathered
4. Tests theories with discipline-appropriate techniques (e.g., simulators, experiments)
5. Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions
6. Integrates new information with previous information or knowledge
7. Selects information that provides evidence for the topic

e. The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile differences.

Outcomes Include:

...nts encountered in the literature

...or reject viewpoints encountered

c. The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners.

Outcomes Include

1. Participates in classroom and other discussions
2. Participates in class-sponsored electronic communication forums designed to encourage discourse on the topic (e.g., email, bulletin boards, chat rooms)
3. Seeks expert opinion through a variety of mechanisms (e.g., interviews, email, listservs)

f. The information literate student determines whether the initial query should be revised.

Outcomes Include

1. Determines if original information need has been satisfied or if additional information is needed
2. Reviews search strategy and incorporates additional concepts as necessary
3. Reviews information retrieval sources used and expands to include others as needed

...

The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

Performance Indicators:

a. The information literate student applies new and prior information to the planning and creation of a particular product or performance.

Outcomes Include:

1. Organizes the content in a manner that supports the purposes and format of the product or performance (e.g. outlines, drafts, storyboards)
2. Articulates knowledge and skills transferred from prior experiences to planning and creating the product or performance
3. Integrates the new and prior information, including quotations and paraphrasings, in a manner that supports the purposes of the product or performance

[illegible] follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.

Outcomes Include

a. Participates in electronic discussions following accepted practices (e.g. "Netiquette")

2. Uses approved passwords and other forms of ID for access to information resources

3. Complies with institutional policies on access to information resources

4. Preserves the integrity of information resources, equipment, systems and facilities

5. Legally obtains, stores, and disseminates text, data, images, or sounds

6. Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own

7. Demonstrates an understanding of institutional policies related to human subjects research

c. The information literate student acknowledges the use of information sources in communicating the product or performance.

Outcomes Include

1. Selects an appropriate documentation style and uses it consistently to cite sources

2. Posts permission granted notices, as needed, for copyrighted material

Information Literacy Competency Standards for Higher Education.(Association of College and Research Libraries, & American Library Association 2000).

ges, and data, as needed, transferring them from their original context

b. The information literate student revises the development process for the product or performance.

Outcomes Include

1. Maintains a journal or log of activities related to the information seeking, evaluating, and communicating process
2. Reflects on past successes, failures, and alternative strategies
3. The information literate student communicates the product or performance effectively to others.

Outcomes Include

1. Chooses a communication medium and format that best supports the purposes of the product or performance and the intended audience
2. Uses a range of information technology applications in creating the product or performance
3. Incorporates principles of design and communication
4. Communicates clearly and with a style that supports the purposes of the intended audience

The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

Performance Indicators:

a. The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology.

Outcomes Include:

1. Identifies and discusses issues related to privacy and security in both the print and electronic environments
2. Identifies and discusses issues related to free vs. fee-based access to information
3. Identifies and discusses issues related to censorship and freedom of speech
4. Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material

... student follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.

Outcomes Include:

a. Participates in electronic discussions following accepted practices (e.g. "Netiquette")

2. Uses approved passwords and other forms of ID for access to information resources

3. Complies with institutional policies on access to information resources

4. Preserves the integrity of information resources, equipment, systems and facilities

5. Legally obtains, stores, and disseminates text, data, images, or sounds

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