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# Information Literacy (IL) of College Freshmen: Implications for an IL Program in Academic Libraries

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## ABSTRACT

Information technology steered the proliferation of information resources in different formats, thus, making available a lot of information choices for the diverse needs of all types of users. To be able to obtain quality resources, the academic libraries play a crucial role in developing the information competencies of college students. This study examined the information literacy of college freshmen using a cognitive test. Scores were analyzed using mean scores, frequency, and percentage. Findings indicate that college freshmen have above average literacy in accessing information, and average in evaluating and using information. Based on these findings, some implications for information literacy programs are derived. These could be used by librarians as their basis in planning and designing information literacy programs that would further develop more advanced information competencies.

*Keywords: Academic libraries, College freshmen, Information literacy*

## Introduction

Information technology has revolutionized the information world. It steered the proliferation of information resources in different formats, thus, making available a lot of information choices for the diverse needs of different users. Simultaneously, information technology cut across physical, geographical and time boundaries providing everyone the opportunity to access information anytime and anywhere.

Along with these developments however, are certain drawbacks. To a great extent, the massive proliferation of information resources led to information overload which made information quality a serious concern. Katz (1992) emphasized that while there is an enormous amount of information, the bulk of the countless articles, discussions, books and even television programs are described as information overload or worse the abundance of garbage. Goldfarb (1999) also pointed out that while students acquire an avalanche of data in a variety of formats with a quick click, the information received may be inaccurate, biased or dated. Similarly, the Pacific Policy Research Center (2010) emphasized that information comes to individuals in unfiltered formats which raise the questions about authenticity, validity, and reliability. The Center further stressed that such uncertain quality and expanding quantity of information creates large challenges for the effectual application of relevant information.

Coupled with this enormous amount of information resources is the rapid advance of information technology which has complicated information access. Definitely, one has to keep abreast of the updates and upgrades involving technology to be able to maximize their capabilities in providing access to information. Failure to exploit the amenities offered by technology would somehow limit if not hinder information access.

These gaps gave rise to information literacy. To survive the difficulties, threats, risks, as well as challenges brought about by information technology, one has to be information literate. An information literate person can take full advantage of the changes afforded by information technology, which to an information illiterate person, could be viewed as barriers or impediments. In the academe, information literate students can locate the best information, evaluate its quality, then use it to further their learning and eventually improve their lives.

The main objective of this study is to look into the information literacy of college freshmen in terms of accessing, evaluating, and using information. Findings can serve as a springboard for librarians in higher education institutions in further developing their information literacy programs.

## Review of Related Literature

Nwezeh (2011) states that information literacy involves a deeper understanding of how and where to find information, the ability to judge whether that information is meaningful and, ultimately, how best to make use of the information to address the problem or issue at hand. The author further elaborates that being information literate requires skills, namely; (1) knowing how to clearly define a subject or area of investigation, (2) formulating search strategies that take into consideration different sources of information and the variable ways that information is organized, (3) analysing the data collected for value, relevance, quality and suitability, and (4) subsequently turning that information into knowledge.

Byerly and Brodie (1999) cited a significant model of information literacy established by the American Association of School Librarians (AASL), and the Association for Educational Communications and Technology (AECT). This model is composed of standards that include three basic components, namely, Standard 1 (Access): The student who is information literate accesses information efficiently and effectively, Standard 2 (Evaluation): The student who is information literate evaluates information critically and competently, and Standard 3 (Use): The student who is information literate uses information accurately and creatively. This framework emphasized information literacy as the keystone of lifelong learning.

In the higher education, information literacy could be assessed using the framework provided by The Association of College and Research Libraries (2004). This framework contains competencies that includes five standards, namely: (1) The information literate student determines the nature and extent of the information needed, (2) The information literate student accesses needed information effectively and

efficiently, (3) The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system, (4) The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose, and (5) 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. Each of these standards has specific indicators and each indicator has specific outcomes that identify a student as information literate. This framework could be helpful in determining the level of information literacy of college students considering the bulk of research assignments and activities required.

The growing concern regarding information literacy in the academe can be observed through some information literacy assessments conducted. The assessment of Singh (2014) examined the knowledge of agricultural graduate students on the use of various library and learning resources, and their information skills. The main objective of the study was to know if the graduate students perceived themselves as capable of being able to identify, evaluate, and use information sources. It also aimed to know if the students have retrieval skills besides having knowledge of search engines, bibliographic databases, library networks, subject gateways, library catalogue/ OPAC, etc. In general, findings reveal that there are notable gaps in the agricultural science students' knowledge on the various information seeking skills and web search engines. Thus, the study concluded that the students' skills on identifying, interpreting, evaluating and accessing information need to be developed and enhanced through a credit bearing course rather than orientation alone

Harrison and Newton (2010) reported some information literacy assessments of undergraduate students of two universities in UK. The assessment conducted to psychology students revealed an extremely poor literacy at locating and accessing information, and in identifying ways to fill their information need. Further, these students had difficulties in constructing search strategies, and organizing and applying information.

Using the same assessment tool Harrison and Newton (2010), examined the information literacy of first year psychology students in comparison with the nursing students. This was conducted to identify the skills possessed by students on the different programs of study within the school, considering that both groups of students tend to have very different educational backgrounds. In terms of information access, both groups have little knowledge about how to locate and access information and how to construct a search strategy. Psychology students however, were more competent at recognizing their need for information and comparing and evaluating information, whereas nursing students have not yet developed these skills. In contrast, nursing students demonstrate better knowledge about how to fill their information need and how to organize and apply information.

The study of Carrie and Mitchell (2010) also focused on assessing the information literacy of students of the Bachelor of Business and Information Management (BBIM) degree program at the University of Auckland in New Zealand. Over the three-year business program, information literacy capabilities were instilled. Some details revealed that in terms of citation, the BBIM students demonstrated an

understanding of correct referencing formats, including in-text citing and paraphrasing. It was likewise underscored that students showed competency in their abilities to reference chapters in e-books, database articles, and a wide range of web sources through the high marks they receive for the annotated bibliography and research log task.

## Methodology

The study was conducted in three colleges of a state university offering agriculture, forestry, and engineering and agricultural technology. These colleges were selected as they are offering the flagship programs of the university.

A total of 220 college freshmen of the said colleges served as the respondents of the study. Considering the crucial roles of these respondents in advancing the food security and economic progress in the future, it is imperative that they should have the necessary information literacy to be able to maximize the diversity of resources made available in their field. These students therefore have to develop their competencies in information literacy while they are in their college level of studies.

A 30-item cognitive test constructed by the researcher was used to gather data. There are 10 questions for each competency namely, accessing information, evaluating information, and using information. To determine the reliability of the test, this was pretested to first year students of the Bachelor of Library and Information Science. Scores were then subjected to split-half method yielding a result of 0.76 indicating that the test is highly reliable.

The test was administered by faculty members of Eng 2B classes upon the approval of the vice president of academic affairs of the University. Retrieval of the questionnaire was done by the same faculty members who administered the test after about 45 minutes.

The study used descriptive statistics to interpret and analyse data. To determine the overall level of information literacy of college freshmen, the mean score was used. Frequency and percentage were used to determine how many students fall under each level of competency. The following scale was utilized to analyze and interpret the scores of college freshmen in each competency.

<u>SCORES</u>	<u>DESCRIPTIVE EQUIVALENT</u>
6 – 10	Above Average
3 – 5	Average
0 – 2	Below Average

## Results and Discussion

### Information Literacy of College Freshmen

This study examines the information literacy of college freshmen in terms of three competencies particularly; a) Accessing information, b) Evaluating information, and c) Using information. As the respondents are still on their first year of study in the tertiary level, the competency on using information referred in this study is limited to competencies in citation of reference sources.

#### Accessing Information

Table 1 shows that college freshmen in general have above average literacy (mean score = 7) in accessing information. This is an indication that these students can easily search and retrieve information in whatever format regardless of the complexities of information access brought by technology.

This finding could be attributed to the persistent integration of technology in the information society. At one point, technology made information access absolutely faster and easier for all users. With the advent of the internet, all kinds of information resources became readily available anytime to anybody making it the first stop for research. This somehow prompted especially the young adults to navigate the internet where they can play games, watch movies, connect with friends, and search for their information need. Today, more of these young adults have become experts as the internet, radio, television, and other applications converge into the mobile technology. To a great extent, many students now use the mobile technology for information searching and retrieval.

Table 1. Level of literacy in accessing information

LEVEL	SCORE	FREQUENCY	PERCENTAGE
Above average	6 – 10	157	71
Average	3 – 5	61	28
Below average	0 – 2	2	1
Mean Score :	7	Above Average	

In addition to the internet, the online public access (OPAC) also plays a crucial role in information access especially for libraries. This OPAC is user-friendly and has made information searching for books, journals, and other physical resources easier and faster. With the use of keywords, subjects, titles, authors, and other access points,

students are able to access voluminous information sources. As such, the OPAC has become the primary access tool for libraries and other information enters.

A closer look at Table 1 shows that while majority of the students have advanced literacy in accessing information, there are also students who have average literacy (28%). These students may not be as adept as those with above average literacy but at least they have the necessary competencies to be able to access their information need. This finding suggests that while these students have the basic competencies of information access, they are not yet able to fully access what they need as they still incur certain difficulties in information searching and retrieving.

This finding could be the result of the complexities brought by technology. Since technology has complicated the way information is produced, organized and accessed, more advanced competencies in accessing information are required which these students still lack. The internet for instance requires the use of search operators to enable the users to dig out more precise and relevant information from the mass of resources globally available. Likewise, the information systems being used by libraries to provide access to their vast collection of print and nonprint resources are getting more complex thus requiring students to have more advanced proficiency in using technology. Considering this inadequacy, some students are unable to explore and exploit the more advanced functions of technology.

Below the average level (1%) is an insignificant number but poses an even greater concern. This is an indication that there are college freshmen who still cannot properly access the information they need. These students lack even the basic competencies in information access and as a result, could access either too little information or too much information of which much may be irrelevant to their needs. Even more alarming is the possibility that these students could be using inappropriate information.

Indeed, today's information environment requires students to possess more advanced searching skills. This concurs with the statement of Thomas, Crow, and Franklin (2011) that if students are going to develop the skills in searching that will enable them to find the most pertinent information to meet their information needs, then they will have to develop more sophisticated techniques rather than serendipitous browsing.

### Evaluating Information

Table 2 shows that college freshmen have average (mean score = 5) information literacy in terms of evaluating information. This indicates that these students are aware of the basic criteria for evaluating the quality of information resources made available. At most they are able to select the best resources in terms of currency, authority, accuracy, and the like.

However, this average rating insinuates that many students still experience difficulties in determining the quality of information resources that are easily accessed. They lack more advanced competencies to evaluate complex texts and select quality resources. With too much information available, students can easily retrieve thousands of resources by sheer chance. Unfortunately, if students are not competent to evaluate

the information being accessed then the tendency of using inappropriate or irrelevant resources is not impossible.

Table 2. Level of literacy in evaluating information

LEVEL	SCORE	FREQUENCY	PERCENTAGE
Above Average	6 – 10	71	32
Average	3 – 5	125	57
Below Average	0 – 2	24	11
Mean Score: 5 Average			

This finding could be one of the drawbacks of the overwhelming growth of information resources. With too much information, students experience certain difficulties in evaluating their quality. To a great extent, the advent of technology especially the computers, allowed the mass production of books, serials, and other paper-based resources. Electronic resources proliferated over the internet as websites and web pages of individuals, organizations, companies, and other entities became available. The process of digitization likewise resulted to an overwhelming increase of digital information. However, much of these information come from unknown or unreliable sources since anybody who can manipulate technology can upload information. These instances require the need for more advanced competencies to be able to examine the quality of information resources being accessed and eventually come up with the most relevant results.

A greater concern shown in the table is the number of students below the average level (11%). This indicates that there are still students do not have even the basic competencies to evaluate information resources. Such case presents a certain risk especially for the internet which has become a repository of both information as well as stuff accumulated over the years. Since the internet is now the primary source of information and nobody is tasked to filter and update its contents, one has to be cautious on the authority and currency of information obtained. Likewise, one has to be alert on the reliability and integrity of information provided as different individuals, agencies, organizations, or institutions post information for different purposes and intentions. These instances require advanced evaluation competencies to ensure the quality of information being used.

Thomas, Crow, and Franklin (2011) emphasized that evaluation skills are not easy for students to develop as they are included in the highest level of thinking. Hence, evaluation includes conceptual analysis as well as critical thinking skills. With the overwhelming proliferation of information resources, students have to acquire these skills to be able to ascertain the quality of information resources that are made easily accessible.

The number of students with above average literacy (32%) in evaluating information is noteworthy. This may be less than half of the students but it shows that

there are students who are very capable of evaluating quality resources. These students can determine the best and most appropriate resources relevant to their information needs. With the more advanced evaluation skills that these students have, they are able to dig out the best resources from the voluminous resources being made available.

Using Information

Table 3 shows that college freshmen have an average literacy (mean score = 4) in using information. As reflected in their competencies on citations, these students have the basics of how to use information ethically and legally. They know how to cite the different reference sources such as books, journals, and other publications they use in their papers. Furthermore, such result shows that these students understand the concepts of plagiarism, copyright laws and other legal aspects relative to the use of information.

Table 3. Level of literacy in using information

LEVEL	SCORE	FREQUENCY	PERCENTAGE
Above Average	6 – 10	40	18
Average	3 – 5	120	55
Below Average	0 – 2	60	27
<hr/>			
Mean Score:	4	Average	

This rating however, denotes that students are still lacking more advanced competencies. Commonly, it has been observed that students are not yet well versed on how to cite websites, electronic books and journals, and other digitized references. Use of these references can be easily checked online thus students need to properly cite them in their papers.

The number of students below the average level (27%) is more alarming as it indicates poor competencies in using information responsibly and ethically. Although the internet allows a lot of possibilities in terms of using information, it also brought along certain complications. With these, students below the average level could be vulnerable to plagiarism, copyright infringements, and other legal cases.

Similar with those at the average level, this poor literacy of students below the average level could be attributed to the diversity of formats in which information is packaged. Aside from the digital and other online resources, many students also commit mistakes in citing magazines, journals, and chapters of books. Others are not also aware of how to cite publications with more than two authors.

It is noteworthy that there are students with above average literacy (18%). These students are adept at using information properly. They are very knowledgeable on how to cite different resources both print and nonprint. In addition, they fully understand the essence of complying with copyright law and other legal provisions related to information use.

This high rating may be attributed to the availability of citation formats online. Students who are really conscious of plagiarism and correct citations can check bibliographic formats online. In addition, a lot of publishers, and other institutions requiring the use of citations have links to some standard bibliographic formats. Likewise, a lot of publishers today include recommended citations for their articles.

### Implications for an information literacy program

Generally, these findings indicate that college freshmen are more adept in accessing information resources. However, they still need to build their competencies in evaluating and using information. In response, libraries are encouraged to consider the following recommendations in planning and designing their information literacy programs.

#### 1) Accessing information

The proliferation of all sorts of information resources made access a daunting task. While the study indicates that students are able to access all if not even more of the resources they need, the question of how and where to access the most relevant resources becomes a big problem especially if faced by a voluminous amount of information resources. Nevertheless, to ensure that the information being accessed by the students are relevant to their information needs, the library has to emphasize the use of search operators which include Boolean operators (\*, +, ^), quotation marks (" "), root searching (\$), and others. Use of these devices would somehow help the users limit their search results to more specific and precise information thereby making the job of information evaluation easier and faster. Use of these devices may also help the students access a wide range of information resources but which are still relevant to their needs.

As information technology continues to bring changes and developments in the information society, academic libraries must be more aggressive in equipping students with more advanced searching and retrieval skills. This concurs with the statement of Thomas, Crow, and Franklin (2011) that if students are going to develop the skills in searching that will enable them to find the most pertinent information to meet their information needs, then they will have to develop more sophisticated techniques rather than serendipitous browsing.

## 2) Evaluating information

Today, empowering the students with the necessary evaluation skills is crucial as the internet has become a one stop shop for all sorts of information resources. Although a lot of resources may be accessible through the internet, much of this may come from unreliable sources. A lot of journals and texts for instance have become predatory as commercial publishers continue to seize the opportunity of publishing online unmindful of the contents. A lot of authors too have taken advantage of such situation resulting to a vast quantity of resources. A lot more just uploaded texts, images, and the like for different reasons or purposes. These circumstances created uncertainties regarding the quality of information contained from the multitude of resources accessible online. Such cases should prompt the libraries to keep their users alert on how to examine the reliability of the information they access.

With these instances, libraries must ensure that their information literacy programs be designed to equip the students with the required skills on how to evaluate information. This would entail some basic knowledge of the criteria for evaluation such as authority, currency, and scope. It also encompasses an orientation of the different URLs of academic institutions, government agencies, professional organizations and associations, and those of individual entities who may be experts in their own fields. A more advanced skill which is the subject or content analysis must be emphasized as this is the ultimately guarantee of the quality of any information.

To further ensure the use of quality resources, libraries are encouraged to include a list of references linked to some resources which are reliable. Such service of the libraries is indispensable to many college freshmen who may still lack the necessary skills in evaluating information.

## 3) Using information

The convergence of all kinds of information in the internet made information use a critical concern. While this development allowed instant access to any information at anytime to anybody, it also made information vulnerable to misuse and abuse. Mere cutting, copying, and pasting of information into one's own paper became so easy. Editing and literally changing a section or piece of an article is not anymore impossible. Likewise, a lot of texts, music, videos, movies and other images are open and are easily downloaded without proper acknowledgements. These improper practices increased the risks for the commission of plagiarism.

Given these circumstances, academic libraries are prompted to empower the college freshmen with the appropriate use of information which may start with an understanding of copyright issues. An information literacy program may therefore include citing information resources especially online journals, books, magazines, web sites and other digital resources. Basically, students ought to acknowledge the authors and other creators of information sources which they use.

## Conclusion

The role of academic libraries in developing the information literacy of students is becoming more crucial as information technology continues to change the information landscapes. Today, much of the information is presented in such a way that it becomes readily available to anybody at anytime. However, the enormous amount of information is overwhelming that the question of how and where to get the most relevant information becomes a challenge. This challenge is even made complicated with the convergence of all sorts of information resources in the internet. Likewise, the fast advance of technology has a lot of amenities that allow many possibilities in terms of how information is created, organized, and managed. Unfortunately, these pose certain limitations to those who are unable to cope with the more advanced systems required to operate today's technology.

Nevertheless, as information centers in the academe, libraries are mandated to provide all kinds of resources relevant to the information needs of their major clients – the students. However, to enable the students to maximize these resources, libraries must equip them with the necessary competencies of how information could be accessed, evaluated, and used. Starting with college freshmen, libraries must ensure that their information literacy programs would develop both the basic and more advanced competencies. This would somehow give the students an equal opportunity to obtain resources which are of high quality. As these students learn to deal with the challenges that come along with information technology, they eventually become independent and lifelong learners. This is the ultimate goal of information literacy.

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