The Prospects and Challenges of Information Retrieval by University Students: A case study of Post Graduate Students of the University of Ghana, Legon

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Poster presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA) Conference, Cape Town, South Africa, September 19-23, 2010

The Prospects and Challenges of Information Retrieval by University Students: A case study of Post Graduate Students of the University of Ghana, Legon

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Abstract

The poor performance of students in the various universities has been attributed to the inability of students to effectively retrieve information for academic work. The purpose of the study was to investigate the prospects and challenges of information retrieval among university students.

The survey research method was used to investigate the awareness and use of information retrieval systems, document retrieved and its relevance to student's information need, challenges of information retrieval among students and future expectation of information retrieving skills by students. Three student faculties in the University of Ghana, Legon participated in the study. A questionnaire consisting of 29 items was used as an instrument for collecting data.

The findings reveal that students from all the faculties considered are highly aware of the information retrieval systems. However, there was no relationship between awareness of information retrieval systems and faculties. The study also shows that the use of information retrieval tools to retrieve relevant information depends on the information needs of the student.

The study recommends that information retrieval skills training programme should be embedded in the curriculum and undertaken at an appropriate time and supported by academic staff of the University. In addition, the University administrators should ensure students studying subjects without an emphasis upon technology receive sufficient information retrieval skills training so that they are not prejudiced against due to subject chosen. Also, ensure that information retrieval skills training are pitched at a level which is appropriate to the individual needs of the student.

1.0 Introduction

Information is being created and it is becoming available in quantities as the access possibilities proliferate. There is a great deal of excitement about the Electronic Information Superhighway that enables information seekers to access the diverse and large information sources. However, the realization of making information available to users almost instantly, commonly referred to as the 'information explosion' is already becoming a mixed blessing without better methods to filter, retrieve and manage this potentially unlimited influx of information. Users face 'information overload' and they require tools to explore the vast universe of information.

According to Alemna (2000)," in African countries, it appears there is so much information generated within our borders that we can use to assist us in our development process. The information seeking behaviour of a user depends on education, access to library and the length of the time a user wishes to devote to information seeking. Naturally, most individuals seek information from their friends, neighbours, colleagues and libraries among others. With the advent of the Internet, many professionals, researchers and highly placed individuals now seek information from the Internet (Aina, 2004). According to Rowley (1988), information retrieval (IR) is concerned with the exploitation of the information and other contents of documents. The establishment of various large databases, which are mounted on computers and made available to anyone who wishes to search them, has a significant impact on the effectiveness and efficiency of the retrieval of information.

At the University of Ghana, students have with time recorded very low academic performance, which has been of great concern to the University authorities and students as well. The poor performance of students have been attributed to a number of reasons and highest among them are that, there are a lot of information retrieval systems designed by the University to help students, particularly at the post graduate levels to retrieve information for academic purposes. However, there have been complaints by most users that they cannot access the available resources and some of the students are not even aware of the existence of the information retrieval systems including the University databases. Moreover, students who are able to retrieve some information end up getting more information which is not relevant to what they want and at times they do not get the desired information.

The study investigates the prospects and challenges of information retrieval among post graduate students at the University of Ghana, Legon. The study among other things assessed the extent of awareness of information retrieval systems among students at the University of Ghana campus. The study also find out the degree to which retrieved documents are relevant to the information needs of students comparatively and ascertain the extent to which students from the faculties retrieve documents. Finally, the level of causes and difficulties experienced by each of the faculties in retrieving information is assessed.

Section 2 presents the methodology of the study by describing the conceptual framework of information retrieval concerned with retrieving documents that are likely to be relevant to a user's information need as expressed by his/her request. Also is a description of the data and how it was analysed. In Section 3 the results of the study are discussed. Section 4 presents the conclusion of the study with some recommendations to Universities and guide policy.

2.0 Methodology

2.1 Concept of Classical Information Retrieval:

The research was based on Classical Information Retrieval as analysed in Rijsbergen (1989) Theoretical Framework of a Non-Classical Logic for Information Retrieval which indicate that, implicit in many information retrieval models is logic. Documents which can be understood as a set of sentences are retrieved if they logically imply the request. However, as we all know, documents rarely imply requests; there is always a measure of uncertainty associated with such implication. So a notion of probable inference is made, and plausibility quantified through some measures. Modelling the information retrieval process in this way goes beyond the keyword approach, and specifies once and for all, the relationship between a document and a request and to compute probable relevance. It is very significant to realize that the above approach is similar to the one adopted in database querying and question-answering.

Information retrieval is concerned with retrieving documents that are likely to be relevant to a user's information need as expressed by his request. A request is an imperfect expression of a user's information need; only a user will be able to tell whether a document contains the information he is seeking. This implies that documents are not relevant to a request, that is, two users with identical request submitted can be satisfied in different ways. One document may be relevant to one user and not to the other. Relevance is connected firmly to 'aboutness'. A document is not relevant because of its colour or shape. It is relevant because it is about the information sought. The relationship between a document and a request will be formalised as a logical implication to which a measure is uncertainly attached. To motivate this 'implication', three examples shall be given to which standard information retrieval models are re-expressed in terms of uncertain implication (Sparck Jones and Willett, 1981).

2.2 Data/Method of Analysis

The survey research approach or method was used for the study. The postgraduate students of the University of Ghana were selected for the case study of the research. Post graduate students were selected due to the fact that they are a major component in all Universities all around the world. Indeed, for all the major universities, the quality of their academic work can be measured by the quality of their post-graduate studies programmes. The target population of the study was based on stratified sampling considering three faculties. The three faculties were purposively selected due to their student population strength. In picking a sample size when undertaking a survey, Alreck and Settle (1985) propose 10% as representative of the entire population

The sample size of the population for the study was one hundred and twenty two (122) students using stratified random sampling. After the stratified random, the accidental sampling was used to select students to obtain the target population. A Chi-Square with a significances level of 0.05 was used for analyzing the data. Cross tabulations were used to ascertain the percentages of respondents who chose each alternative for each question based on the objective of the study. The relationship between information retrieval by students and faculty and level were also

ascertained by the Chi Square test. The Chi Square test is used to analyse categorical or nominal data (Fraenkel and Wallen, 1993). Frequency distribution was used with the support of tables and further converted to percentage and Chi-Square with a significant level of 0.05.

3.0 Results and Discussion

3.1 Awareness of Information Retrieval Systems

Table 1.2 shows that, 99.1% of students were aware of information retrieval systems with Social Studies responding to 98.2%, Science and Arts students responding to 100% of students' awareness of information retrieval systems. This shows that post graduate students were aware of information retrieval systems. The Chi-Square Test in Table 1.2 with a significance value of 0.604 was high which confirms that there was no relationship between awareness of information retrieval systems and the faculties of respondents. This means that awareness of information retrieval systems does not depend on the faculty of respondents. The finding shows that all students from all the faculties were highly aware of the information retrieval systems.

The findings of the study indicate that Students from all the three faculties were fully aware of the information retrieval systems on the University of Ghana campus. Also, students from the Science and Arts Faculties were more aware of the information retrieval systems than students from the Social Studies Faculty. It was found that the awareness of information retrieval systems did not depend on the faculty of the students. This may be due to the fact that the faculties of the students do not have programmes which educate their students on awareness of information retrieval systems on the University campus. The finding on awareness was consistent with the statement of Ray and Day (1998). Ray and Day (1998) said many students do use some electronic resources and are aware of their benefits, but the majority still likes to use printed material to complement this technology. In addition, majority of students acknowledge an awareness of access to a networked computer by the University, although many stated computer availability deterred them from using the resources.

Table 1.2 - Students Awareness of Information Retrieval Systems by Faculty

Awareness of information retrieval systems	**Faculty of Respondents N = 112**						**Total**	
	SOCIAL STUDIES		**SCIENCE**		**ARTS**			
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
YES	55	98.2%	29	100%	27	100%	111	99.1%
NO	1	1.8%	0	.0%	0	.0%	1	.9%
TOTAL	56	100%	29	100%	27	100%	112	100%
Chi-Square value= 1.009[a]		df = **2**		Significant value = **0.604**				

a. 3 cells (50.0%) have expected numbers less than 5. The minimum expected number was .24.

3.2 Internet Service and Electronic Resources Usage

There are various Internet services available for students. This question was posed to find out which services the students were aware of and also to find out which of the services they use most often. The results are shown on table 1.3 and 1.4.

The preference for the use of a particular information retrieval system was dependent on the faculty of respondents. The findings show that, Social Studies students used more catalogues than students from the two faculties. The Faculty of Science students used periodical index and journal contents more than the Social Studies and Arts students. Bibliographies were highly used by Arts students. The results show that Arts students used the e-mail and downloading information more than Science and Social Studies students. The Science students used discussion groups, searching of databases and the World Wide Web more than the Science and Arts students. The finding was consistent with the statements of Fedel et al. (1999).

Fedel et al. (1999) have said students displayed a largely positive attitude towards the Internet, regarding the use of the Web and its "one-stop shopping" experience as easier than trying to find the same information by possibly having to look in several books.

However, in contrast Brown (1994) states that, “A widely quoted fact on the Internet is that, only 10% of the faculty with access to the Internet actually uses it. And only 30% use the Internet for anything other than e-mail. There are many possible reasons for this, one of which is lack of awareness of the information resources on the Internet and of the skills to locate the specific information required”.

Table 1.3 - Students Internet Service Use by Faculty

Internet retrieval services often used	**Faculty of Respondents N = 112**						**Total**	
	SOCIAL STUDIES		**SCIENCE**		**ARTS**			
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
E-MAIL	16	28.6%	5	17.2%	9	33.3%	30	26.8%
DISCUSSION GROUPS	7	12.5%	4	13.8%	2	7.4%	13	11.6%
SEARCH ENGINE	6	10.7%	4	13.8%	7	25.9%	17	15.2%
DOWNLOADING INFORMATION	4	7.1%	1	3.4%	2	7.4%	7	6.2%
CONNECT TO REMOTE COMPUTERS	6	10.7%	2	6.9%	0	.0%	8	7.1%
SEARCHING DATBASES	9	16.1%	7	24.1%	3	11.1%	19	17.0%
WORLD WIDE WEB	8	14.3%	6	20.7%	4	14.8%	18	16.1%
TOTAL	56	100%	29	100%	27	100%	112	100%

The result from Table 1.3 shows that e-mail service was the most popular and frequently used Internet service by students (27%). It was followed by searching database which was 17.0%, which was followed closely by the use of the World Wide Web which was used by a little over 16% of respondents. The uses of search engines came right after the World Wide Web. Students from the Arts Faculty representing 33.3% used e-mails. This was closely followed by Social Studies Faculty with 28.6% and Science Faculty with 17.2%. Students from the Science faculty with 20.7% used World Wide Web as compared to students from Arts and Social Studies Faculties with 14.8% and 14.3% respectively. The Arts students were the highest users of search engines with a percentage of 25.9% compared to Science of 13.8% and Social Studies of 10.7%. The results show that Arts students used the e-mail and downloading information more than Science and Social Studies students. The Science students used discussion groups, databases and the World Wide Web more than the Science and Arts students. The Social Studies students mostly connect to remote computers than Arts and Science students

3.3 Search Strategies Used by Faculties

The results from table 1.4 show that only 14.8% of the respondents from the Faculty of Arts used the Boolean Operators as a search strategy. Also, 37.5% of respondents from the Faculty of Social Studies used the Boolean Operators and 37.9% of the respondents in the Science Faculty used the Boolean Operators. Similarly, 34.5% of the respondents from the Faculty of Science used the Index Phrase as their search strategy with the remaining percentage of 27.9% used both search strategies.

As much as 77.8% of respondents from the faculty of Arts used the Index Phrase. Less than 10% of respondents in the Faculties of Arts and Social Studies used both search strategies at parallel. The Index Phrase from the Table 2.0 was the more common of the two strategies mostly used by students from all the faculties. Respondents (54.5%) from all the faculties used the Index Phrase as compared to an average percentage of 32.1% for the use of Boolean Operators.

The findings on how search strategies such as Boolean Operators and Index Phrase have helped students to retrieve relevant information as expressed by their request show that Science students used the Boolean Operators more than the Social Studies and Arts students. Majority of the Arts Students used the Index Phrase more than the Science and Social Studies Students. Most of the students from the Social Studies and Art Faculties did not find the Boolean Operators useful in retrieving relevant information as expressed in their request. Also, the use of the Boolean Operators and Index Phrase to retrieve relevant information as expressed in students request did not depend on the faculty of the students. This result concurs with the findings of Al-Kharashi and Evens (1994) which revealed that using roots and stem as index terms give better retrieval results than using words. The root performs as well as or better than the stems at low recall levels and definitely better at high recall levels.

Table 1.4 - Students Use of Two Search Strategies by Faculty

Search strategies used	Faculty of Respondents N = 112						Total	
	SOCIAL STUDIES		SCIENCE		ARTS			
	No.	%	No.	%	No.	%	No.	%
KEYWORDS (BOOLEAN POERATORS)	21	37.5%	11	37.9%	4	14.8%	36	32.1%
INDEX PHRASE	30	53.6%	10	34.5%	21	77.8%	61	54.5%
KEYWORDS AND INDEX PHRASE	5	8.9%	8	27.6%	2	7.4%	15	13.4%
TOTAL	56	100%	29	100%	27	100%	112	100%

3.4 Challenges of Information Retrieval among Students

Table 1.5 shows that, more than half of respondents from the Science Faculty (55.2%) have difficulty with 'inadequate time' students have in retrieving information. Students from the Arts Faculty follow with 37% as compared to Social Studies Faculty with 35.7%. Respondents from the Arts (29.6%) Faculty has difficult with 'frequently disruption' of Internet access service. Followed closely was the Social Studies Faculty with 28.6% as compared to respondents from the Science Faculty with only 24.1%. Also 18.5% of respondents from the Arts Faculty have difficulty in the Internet not being user friendly. Followed closely is Social Studies Faculty with 16.1% as compared to Science Faculty with only 6.9%. Respondents from the Social Studies Faculty representing 19% have difficulty in locating relevant information as compared to Arts Faculty with 14.8% and science Faculty with 13.8% respectively. The result shows that respondents from all the faculties have greater difficulty with 'inadequate time' students have in retrieving information with students from the Science faculty being the highest. Most of Students in the Art Faculty have difficulty with the frequently disruption of Internet access service. More students from the Social Studies Faculty have difficulty in locating relevant information than students in the Science and Arts Faculties.

The Chi-Square test in Table 1.5 with a significance value of 0.658 shows that there was no strong relationship between the three faculties and the difficulty respondents has in retrieving information. This means that respondents from the three faculties did not relate to the difficulty respondents have in retrieving information.

The findings on challenges of information retrieval among students have shown that, students from all the faculties have great difficulty with inadequate time they have in retrieving information with students from the Science faculty being the highest. The difficulty with time students have may be due to the fact that students take other activities on campus important than concentrating on improving their information retrieval skills to obtain relevant information to

enhance their academic work. In addition, it may be due to the fact that some lecturers do not encourage students who make extensive research outside what has been taught in the lecture room. This makes students reproduce lecture notes rather than being encouraged to use information retrieval tools to acquire extensive knowledge about the subject matter. Most of the students in the Art Faculty have difficulty with the frequently disruption of Internet access service. More students from the Social Studies Faculty have difficulty in locating relevant information more than students in the Science and Arts Faculties. A Chi-square text conducted by the researcher indicated that the three faculties did not relate to the difficulty students have in retrieving information. The finding on inadequate time students have in retrieving information reaffirms Murphy (2003) claims that many participants have at least some difficulty in keeping up with research in their field(s) of study in regard to time. As a result, many participants do at least some of their information-gathering in their off-time or delegate certain research responsibilities to others.

Table 1.5 - Students Difficulty in Retrieving Information by Faculty

Difficulty in retrieving information	**Faculty of Respondents N = 112**						**Total**	
	SOCIAL STUDIES		**SCIENCE**		**ARTS**			
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
INADEQUATE TIME BY STUDENTS	20	35.7%	16	55.2%	10	37.0%	46	41.1%
FREQUENTLY DISRUPTED INTERNET ACCESS SERVICE	16	28.6%	7	24.1%	8	29.6%	31	27.7%
INTERNET IS NOT USER FRIENDLY	9	16.1%	2	6.9%	5	18.5%	16	14.3%
DIFFICULTY IN LOCATING RELEVANT INFORMATION	11	19.6%	4	13.8%	4	14.8%	19	17.0%
TOTAL	56	100%	29	100%	27	100%	112	100%
Chi-Square = 4.141[a]		df = **6**		Significant value = **0.658**				

a.4 cells (33.3%) have expected number less than 5. The minimum expected number is 3.86.

Conclusion and Recommendations

This study presented the results of a survey of the prospect and challenges of information retrieval by post graduate students of the University of Ghana, Legon. Students from the Social Studies, Science and Arts Faculties were fully aware of information retrieval system and

depending on the Faculty students belong used them. However, the use of the information retrieval systems to obtain relevant information was a problem with all the faculties. The main reasons for the difficulties in retrieval of information was attributed to frequently disruption of Internet, inadequate time by students on campus and non availability of training programmes to educate students on how to use information retrieval tools to obtain relevant information. The problems notwithstanding, there have been positive uses of the search strategies to retrieve relevant information by all the faculties. Students from the Social Studies, Science and Arts Faculties expect in the future to have access to Internet services in their hostels and also look forward to a well structured programme to train students to use information retrieval tools effectively to retrieve relevant information to improve academic work.

The numbers of students entering higher education are increasing as the number of staff not rising accordingly, the possibility of ensuring that students have acquired the correct information retrieval skills is essentially very difficult to monitor.

Long experience of user education programmes has shown that teaching information retrieval skills to students should be embedded into the curriculum and done at a time when the user can understand its appropriateness. This training should also be adapted to the varying abilities of the users. If students are aware that the skills required for using electronic resources are not insular, and indeed provide them with valuable transferable lifelong skills, skills which employers will be looking for, they may be more likely to learn how to use them.

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