

Information-Seeking Behavior of Engineering and Business Students at Kuwait University

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Abstract: Because of the seeming predominance of the Internet as a research tool at the present time, this study is an attempt to establish the information-seeking patterns of behavior among college students at the colleges of Business Administration and Engineering of Kuwait University. The research tool was in the form of a questionnaire administered to a sample of students from these colleges who are currently engaged in mandatory English-language research-writing courses. The study found that students see the Internet as a preferred search tool and do not consider knowledge of either English or computers a hindrance to their search efforts. Thus, the study concludes, it would be advisable for colleges, and indeed schools, to include classes in their curricula in the science of seeking information over the Internet.

Key words: Information-seeking, Information-seeking behaviours, Information needs, Behaviour, Application of technology, Information technology, English for specific purposes (Business), English for specific purposes (Engineering), English for specific purposes (Business vs Engineering).

Introduction

One of the greatest motivations for scientists, engineers, and in general, researchers comes from the past discoveries. Past discoveries help scientists find trodden paths, formulate new theories and excel among the members of their immediate organization. Members of

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scientific and research families, in turn, serve as the providers of scientific motivation for those of the future. In fact, they are the major producers and users of “information.” There are diverse information user communities. Pinelli (2001), in an argument focusing on engineers and scientists, made a convincing distinction between these user groups. Familiarity with and an understanding of the information-seeking habits and behaviors of the users is the first step towards meeting the needs of the information users. How do members of different information communities discover, select and use numerous information and communication resources available to them? Information specialists and researchers have tried to address these questions through surveys, analyses, and studies since the end of World War II with different degrees of success in identifying characteristic habits and behavior.

The advances in computer-based communication technology have had a great impact on the information seeking behaviour activities. The major leap in the area came after the introduction of online databases and search engines. Nowadays, in order to discover who Kurupatkin was, how to make Chinese noodles, where Tiahuanaco is, when the ice age started, which planet has the most of moons, or whose words made a distinction between the death of one man and millions of them, we tend to refer to a search engine at an initial step. It seems that the use of the library has become secondary since computers and Internet facilities have become almost omni-present. In fact, the Internet seems to be one of the major places-if not the major place-that people refer to in their quest for information. College students mostly consider the Internet as a heaven-sent, trustworthy resource assisting them in meeting their course requirements. It appears that the use of this medium has superseded the use of other sources of information such as books, CD-ROMs, microfilms, etc.

The current study describes a questionnaire survey of engineering and business students at Kuwait University with regards to their information-seeking behaviors. The survey was conducted to gain a clearer picture of how the students at the College of Engineering as well as those at the College of Business Administration collect the information they require to cope with the research writing course offered at each college in English. Accordingly, it is assumed that an insight into the information- seeking behaviors of the above mentioned students *does*

affect their performances. This study investigates the manners or behavior of students in seeking information when they are required to write a research paper. The present study also intends to provide teachers of the research writing courses at the two colleges with useful tips that can help to better deliver the course and provide guidelines to their students. Additionally, findings of this study would help course coordinators make necessary revisions in the curriculum.

Definition of Terms

The terms **information need** and **information seeking behavior** have been used diversely and sometimes interchangeably. However, specific meanings are found when they are looked at from different perspectives. Bateson (1972: 453) used the term information to “mean any difference that makes a difference to a conscious human mind,” while within library and information science, information has been defined as “any stimulus that reduces uncertainty” (Krikelas, 1983: 6).

The term **information needs** has also been used in a variety of ways. Information needs is a subjective, relative concept residing in the mind of the individuals who experience it. Wilson (1981) and Krikelas (1983: 6) also defined information needs as the “recognition of the existence of uncertainty.”

The most appropriate definition, in our point of view, is what Wilson (1981) considers the information-seeking behavior to be: the result from the recognition of some need. Krikelas (1983) regards it as “any activity of an individual that is undertaken to identify a message that satisfies a perceived need. In other words, information seeking begins when someone perceives that the current state of possessed knowledge is less than that needed to deal with some issue.”

Relative Literature

Watson-Boone (1994) found out that the bibliographies, indexes and guides, abstracts and databases were the chief secondary services to which humanities scholars refer in identifying research material and original material of whatever date appeared to be more important than current material. In general, the following are some of her observations:

- 1 - Researchers have a limited need for developing or using general bibliographic tools;

- 2 - They consult colleagues and initial print source material for explicit and implicit references to other works;
- 3 - Book reviews and personal collections are the leading information sources;
- 4 - They use catalogs to find known, secondary source materials.
- 5 - The use of mother tongue is highly preferred.

In a study made between 1995-1997 on researchers of the humanities and social sciences, Romanos de Tiratel (2000) found that the majority of them initially consult colleagues and specialized literature. Both groups used formal bibliographic tools for their research in the same way, i.e. “the majority of either area do not use bibliographies” (Romanos de Tiratel, 2000). Referring to citations in books or journals was more common than using the form of accessing tools for specialized literature. She also noted that there was a high preference for using resources in the mother tongue.

Rosenbloom and Wolek (1970) were among the first people to conduct large-scale research of those working in industry studies, and they noted three fundamental differences between engineers and scientists. Kremer (1980), in his Ph.D. dissertation, found that the design engineers who were the subjects of his research initially contacted their colleagues within their company and later tried colleagues outside of the company.

Shuchman (1981) made a broad-based study of information transfer in engineering. In his study, he found that there was a strong preference for informal sources of information. He also noted that the major difficulty engineers face in finding the information they need is identifying the specific piece of missing data, and then discovering who has it.

Kaufman (1983) reported that engineers consult their personal collections first, followed by colleagues, and then formal literature sources. They utilized librarians and the information specialists “to find leads to information sources.” Online computer searches, as he reported, and which was later reiterated by Graham and Taxas (2003), were used primarily to define the problem. He also reported that engineers use different types of information sources in problem solving; however, engineers depend on their personal experience more often than any single specific information source. However, Corcoran and Watson (2005)

further added that engineers not only “find leads,” but also help leaders as providers of information.

Ellis (1989), Ellis et al. (1993), and Ellis and Haugan (1997) elaborated a general model of the information-seeking behaviours on the basis of their studies on the web information-seeking patterns of social scientists, which included a wide spectrum of the related sub-disciplines including business as well as research physicists, chemists, engineers, and research scientists in an industrial firm. A version of the model categorizes six different activities regarding information-seeking behaviour: generate, starting, chaining, browsing, differentiating, monitoring and extracting.

Pinelli (2001) reported that engineers need information to solve an immediate problem or make a decision, and that their primary output is not information for further research, but rather a good service. He also indicated that engineers are often asked to confine their findings to within their companies for business or security reasons. That would make them reluctant to share the information they gain with their fellow colleagues outside their companies.

Hirsh (2000) and Hertzum and Petjersen (2000) both conducted studies, the findings of which emphasized the importance of human interaction in seeking information. Hirsh (2000) reported a primary reliance on fact-to-face communication among professional engineers. She also observed that personal sustained relationships between engineers and information analysts were essential to information seekers. Furthermore, she noted face-to-face communication and dynamic personal interaction were preferred research techniques.

Majid and Tee (2002) made a remarkable case study on the use of information sources by computer engineering students at Nanyang Technological University in Singapore. The study, among other things, reports that students seek information from books, lectures, and Internet resources before consulting with their ‘colleagues’ (i.e. other students).

This Present Study

The present study concerns the information-seeking behaviours of the students at two different colleges at Kuwait University: the College of Business Administration and the College of Engineering & Petroleum. English 106 at the College of Business Administration and English 221 at the College of Engineering are both required credit courses. In both of these

courses the technique of writing research papers is taught. Part of the final assessment for each student is made based on the research topic he/she chooses and the research paper he/she presents at the end of the course which will be followed by an oral presentation on the same topic. The students consult teachers on the choice of their topics, possible sources of information, and mechanics of writing as well as grammar and usage. It has been witnessed that students mostly complain about the difficulty of finding the information they need to write their research papers. A logical conjecture arising here may be that if teachers of the mentioned courses have some awareness of the information-seeking behaviours of their students, they can better direct the students towards their needed resources. A secondary finding of this study would be the differences in the information-seeking behaviours of the engineering students and those of the students studying business administration. Since the subjects are all native speakers of Arabic, the role of the foreign language in the information-seeking behaviors of both groups according to their perceived level of proficiency in the foreign language is also considered. Moreover, the participants' self-perceived knowledge of computers in general, and of the Internet and the available search engines in particular, were taken into account.

Methodology and Statistical Analysis

The Study

The object of this study was to:

- 1 - Gain a clear picture of how students' at the college of Engineering & College of Business Administration at Kuwait University collect the information they require to cope with the research writing courses.
- 2 - Investigate the manner or behavior of two colleges' students in seeking information when they are required to write a research paper.

Methodology

A 29 item Likert scale instrument was developed and distributed among the students, which consisted of the following:

- 1 - General information which was compiled by gathering information on the subjects.
- 2 - Closed questions where choices 1.(Excellent), 2.(Very Good), 3.(Good), 4.(Fair), 5.(Weak) were provided.

Subjects

This study was conducted during the final week of fall 2004 semester. The total number of the university students' registered in the research writing courses were as follows:

- 1 - 249 students' of English (221) at the college of Engineering & Petroleum.
- 2 - 211 students' of English (106) at the college of Business Administration.

A total number of 460 students' were registered. The questionnaire was sent to both colleges to be given to all the 221 & 106 research writing students. The number of samples collected from the College of Engineering was 144, and 64 samples were collected from the College of Business Administration. A total number of 208 samples were collected.

Data Analysis

A 29 item Likert scale instrument was developed and distributed among the students of college of Engineering & college of Business Administration. The collected data was processed using SPSS version 11.5 which yielded the results below (Table 1). A total number of 208 samples were collected, 38% of which were male and 62% female. The participants consisted of different statuses, as shown in Table 1 below:

Table 1: Participants' classification based on their status

Status	Frequency	Percent
Freshman	31	14.9
Sophomore	38	18.3
Junior	114	54.8
Senior	21	10.1
*Veteran	4	1.9
Total	208	100

* Veteran: Those who had spent more than four years at college

Home turned out to be the most popular place to access the Internet (93.8%); however, 50% of the respondents use the computer labs in their colleges followed by 22.6% of them using the computer facilities in libraries as the points of access to the Internet. Using Internet cafes and office facilities were the least popular places to access the Internet with

5.8% and 2.9% of the respondents respectively. The tabulated data can be seen in Table 2 below:

Table 2: Place of computer access

Place of Computer Access	Frequency	Percent
Home	195	93.8
College	104	50
Library	47	22.6
Office	12	5.8
Internet Cafe	6	2.9

According to the results of the study the word “research” had no clear meaning for (18.8%), of those taking part; however, 81.2% had a positive idea about doing research and even expressed excitement for doing research. A great majority of them even preferred to choose their own research topic (85.1%) rather than work on a prescribed topic.

To achieve more accurate results in drawing the relationships between several variables, the five choices on items 8-19 were allied to three choices, where choices 1.(Excellent) and 2.(Very Good) are considered as one (EV), choice 3.(Good) stands alone (G), and choices 4.(Fair) and 5.(Weak) were allied (FW).

I. Analysis of the Data Pertaining to the College of Business

The following (Table 3) shows the respondents’ self-perception of certain required knowledge distributed by percent:

Table 3: Self perceptions table in the College of Business

Self Perception	EV	G	FW
Knowledge of English	55.6	39.7	4.8
Knowledge of Computers and the Internet	65.1	27	7.9
Using Library Catalogs	30.2	47.6	22.2
Using Databases	30.2	39.7	30.2
Using Search Engines	76.2	23.8	0
Using Directories	28.6	41.3	30.2

Moreover, regarding the preferences the respondents gave to the sources of finding information, the Internet and the library were equally ranked followed by:

A - asking a friend/colleague.

B - asking the teacher.

To determine the relationship between the respondents' self-perception of their computer knowledge and the knowledge of the English language, a contingency table was drawn up which showed that there is positive correlation between the mentioned items (0.328). In non-statistical terms, this means that those who perceived themselves as more linguistically proficient had perceived themselves equally proficient in using computers. However, no correlations were found between the self-perceived knowledge of English and the respondents' major problems in carrying out research. Moreover, no correlations were found between the respondents' knowledge of computers and the Internet and the problems of conducting research. However, the Internet was considered as the most reliable source of finding information; it was seen by 61.9% as extremely reliable or reliable, 31.7% somewhat reliable, and by 6.3% unreliable or extremely unreliable. Table 4 shows the solutions chosen by the respondents to solve their problems in finding information:

Table 4: Self-perceptions of different skills in the College of Business

Solution	EV	G	FW
Changing or Modifying Keywords	39.7	54	6.3
Using Advanced Search Facility	31.7	57.1	11.1
Using Boolean Operators	27	50.8	22.2
Trying Other Search Engines	54	36.5	9.5
Using Mailing Lists	14.3	50.8	34.9
Using Chat Rooms	11.1	39.7	49.2

Language (Arabic/English) wasn't viewed as a factor affecting the process of research.

II. Analysis of the Data Pertaining to the College of Engineering

The distribution of the respondents' self-perception of certain required knowledge in percentage terms is shown in (Table 5):

Table 5: Self perceptions table in the College of Engineering

Self Perception	EV	G	FW
Knowledge of English	38.2	50.7	11.1
Knowledge of Computers and the Internet	61.8	33.3	4.9
Using Library Catalogs	19.4	46.5	34.1
Using Databases	56.3	29.9	13.9
Using Search Engines	77.1	20.8	2.1
Using Directories	49.3	34	16.7

The students who participated in this study showed high preference in using the Internet as the source of information. That was followed by the preference for the library. Referring a colleague or friend and asking a teacher were equally ranked and preferred.

A contingency was formed and used to show the correlation between the respondents' self-perception of their computer knowledge and their knowledge of the English language. The table shows that there is positive correlation between the mentioned items (0.31), i.e. the students who perceived themselves as more proficient linguistically, had perceived themselves equally proficient in using computers and the Internet. No correlations were found between the self-perceived knowledge of the English language, the self perceived knowledge of computers and the Internet, and the problems of conducting research.

Table 6 below shows the solution chosen by the respondents to solve their problems in finding information:

Table 6: Self-perceptions of different skills in College of Business

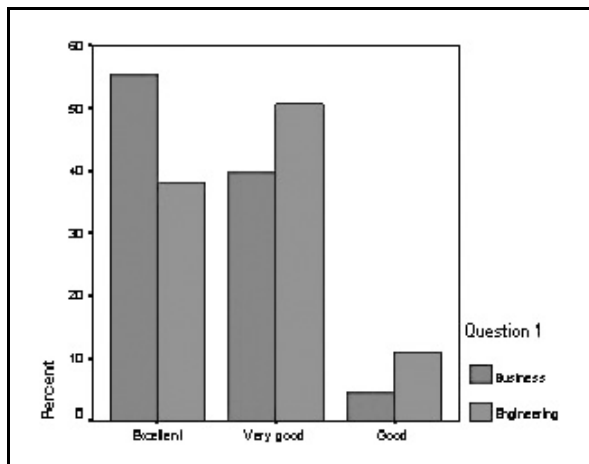
Solution	EV	G	FW
Changing or Modifying Keywords	55.1	35.5	9.4
Using Advanced Search Facility	45.3	48.2	6.6
Using Boolean Operators	36.3	43.7	20
Trying Other Search Engines	49.6	39.3	11.1
Using Mailing Lists	29.3	39.8	30.8
Using Chat Rooms	29.1	24.6	46.3

Language was viewed as a factor which might affect the process of research. The respondents showed some preference in using materials in Arabic. Moreover, the Internet was considered as the most reliable source of finding information by 70.9%, being extremely reliable or reliable, by 22.7% being somewhat reliable, and by 6.4% being unreliable or extremely unreliable.

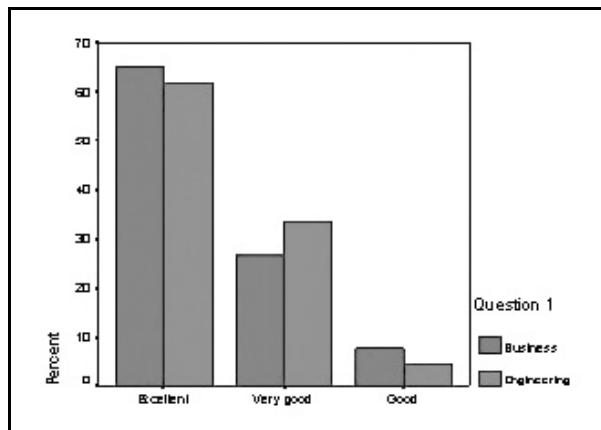
III. Comparison

To find out if there are similarities between the major problems students of the colleges of Engineering and Business Administration have in conducting research (questions 14-19), a special² test was used (Mood et al, 1974). For question 14 (finding somebody to help) the subjects in the College of Engineering agreed that finding somebody to help them is, in fact, one of their problems. However, the students at the College of Business didn't consider it as a factor. They mostly expressed indifference. However, both groups indicated that finding resources is a major problem. Selecting from the multiplicity of sources available through the Internet (question 16) was also viewed equally by both groups as being problematic (i.e. agree). In spite of the fact that there were similarities between the responses students of the two colleges gave in response to question 17 (writing the body of the research), a degree of difference exists, i.e. many students in the College of Engineering agreed

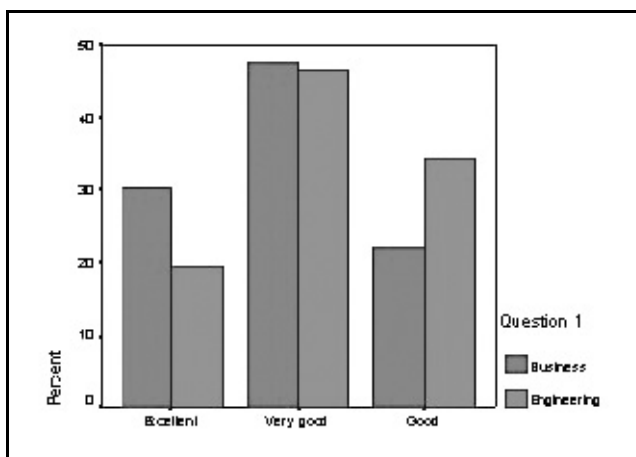
that writing the body of research is, indeed, a problem whereas the students in the College of Business mainly disagreed. Both groups shared in considering writing bibliographies (question 18) as a problem; however, the engineering students expressed more agreement about it. No differences were detected in the responses given to question 19 (the time writing research papers takes). The comparative analysis has been summarized through the graphs below.



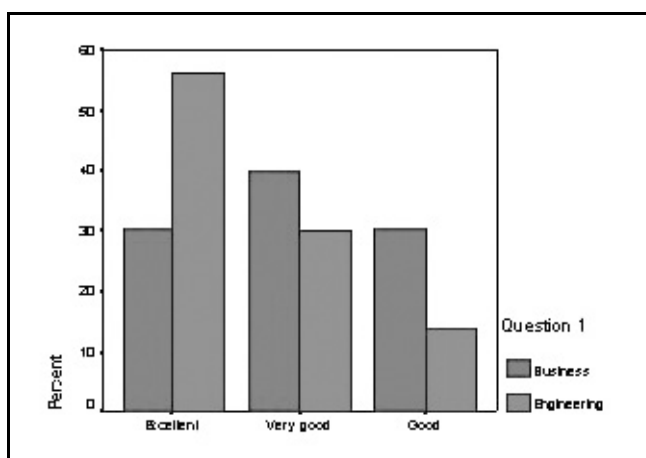
Graph No 1
Question 8 (How good is your knowledge of English?)



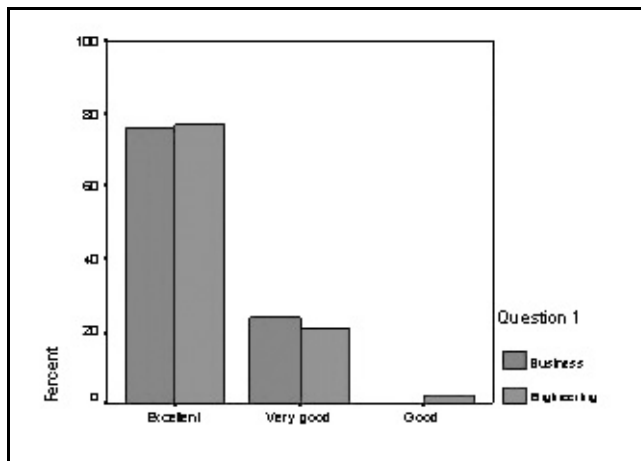
Graph No 2
Question 9 (How good is your knowledge of Computer and Internet?)



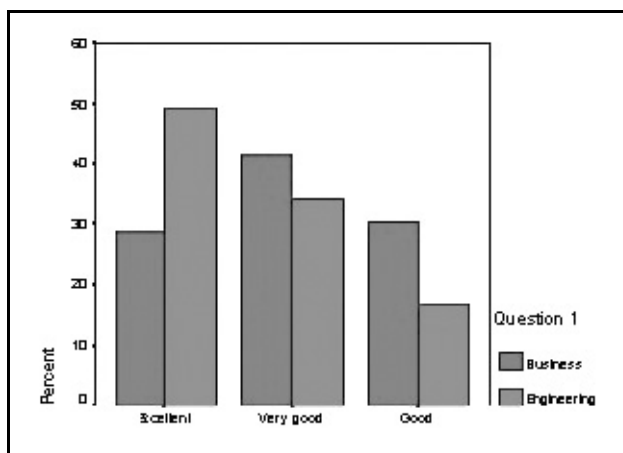
Graph No 3
Question 10 (How good is your knowledge of using a library catalogue?)



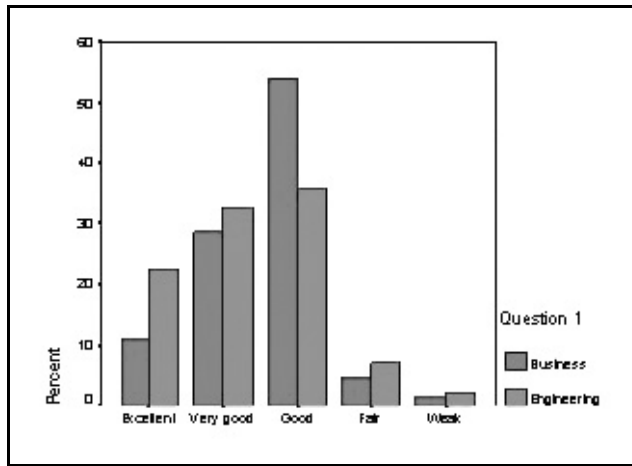
Graph No 4
Question 11 (How good is your knowledge using a Database?)



Graph No 5
Question 12 (How good is your knowledge using search engines like Google?)

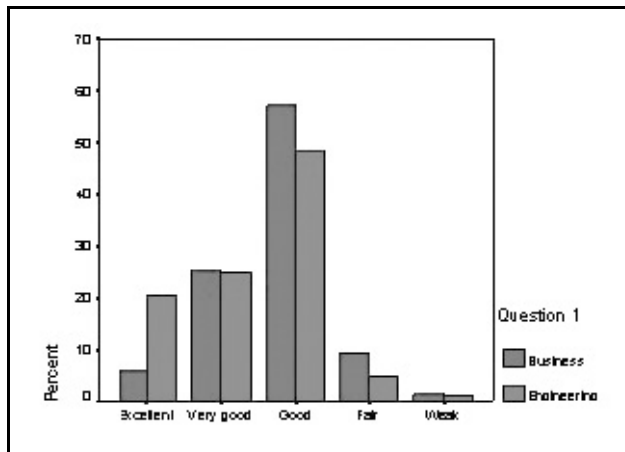


Graph No 6
Question 13 (How good is your knowledge using a dictionary such as telephone directory (print/online/CD-Rom?)



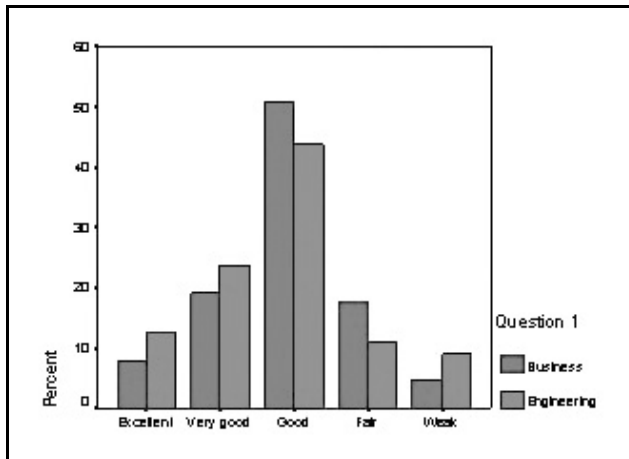
Graph No 7

Question 14 (How do you rate your ability to change or modify keywords when you cannot find the wanted results using a search engine?)



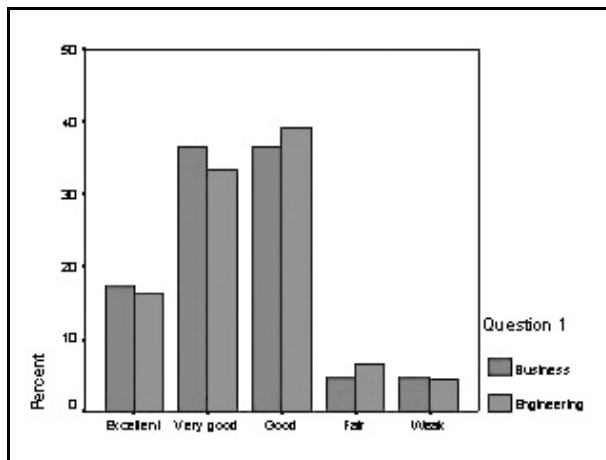
Graph No 8

Question 25 (How do you rate your ability to use the advanced search facility when you cannot find the wanted results using a search engine?)



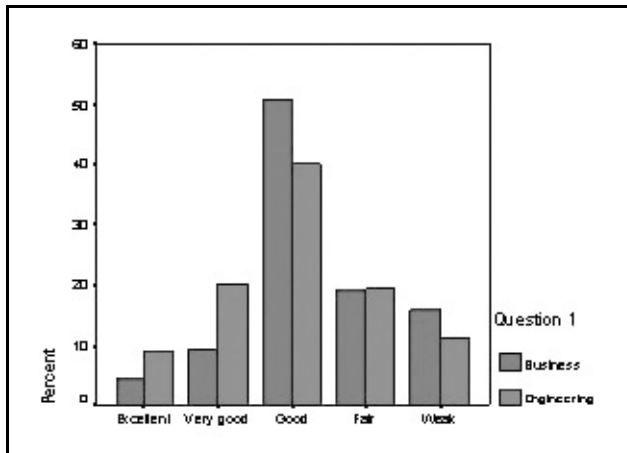
Graph No 9

Question 26 (How do you rate your ability to use Boolean operations when you cannot find the wanted results using a search engine?)



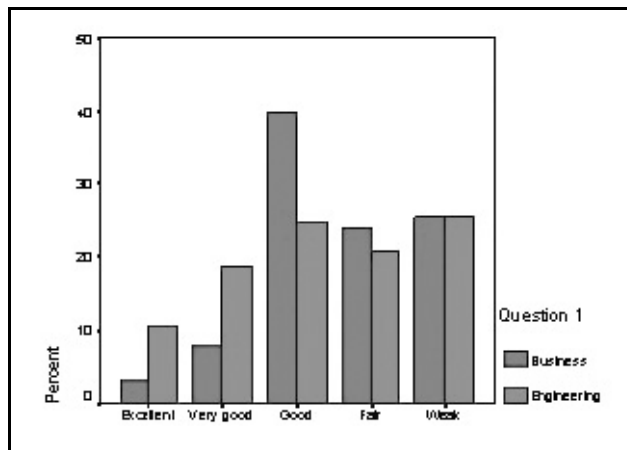
Graph No 10

Question 27 (How do you rate your ability to try another search engine when you cannot find the wanted results using a search engine?)



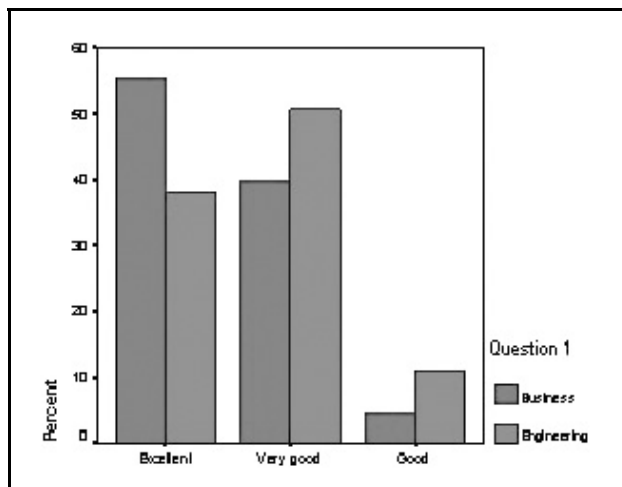
Graph No 11

Question 29 (How do you rate your ability to try another engine when you cannot get into a relevant mailing list and ask for clues?)

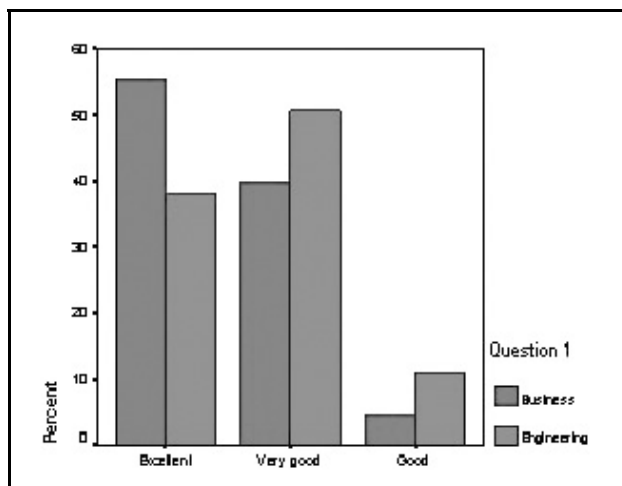


Graph No 12

Question 29 (How do you rate your ability to try another engine when you cannot get into a relevant chat room and ask for clues?)



Graph No 13
Question 21 (Arabic resources are as useful
for your research as English resources)



Graph No 14
Question 22 (The Internet would be a better source
if there were more materials in Arabic)

Conclusion and Recommendations

This study was conducted to discover the information-seeking behaviors of the students in two different colleges-Engineering and Business Administration-at Kuwait University. In both of these colleges students must take a course offered by the respective English language units, in which they have to conduct a research project. Based on the feedback from the students, it was initially believed that the level of the self-perceived knowledge of English language and computers would be a deciding factor. However, the study shows that students in both colleges do not generally consider there to be any relationships between these two variables. The study also reveals that teachers and colleagues are the last people students refer to if and when they seek information. The use of the Internet is highly popular among the students of both colleges and, in fact, it is the initial point of departure in pursuit of information. Perhaps this can be viewed as an indication that teachers need to bring themselves more up to date-in terms of the application of technology-to prepare online information gateways (e.g. links, pages, newsgroups, etc.) useful for the students. Moreover, it is recommended that the technical writing course coordinators make necessary changes to the available course curriculum, considering the students' preference to using digital offline, online, or virtual resources when seeking information. This preference in turn makes means for another requirement for both teachers and students, i.e. the evaluation of the data collected from digital online or offline sources, thereby sifting reliable information from unreliable information.

The study also revealed that language is not considered a barrier in finding resources. In fact, majority of the students polled preferred materials in English rather than Arabic. Moreover, the study shows that there is the tendency to use the library; however, because of some factors, which were out of the scope of this study, they don't consider that as their first choice. A recommendation here would be information literacy classes conducted by the library, or the department of Library and Information Sciences, which both the students and teachers would attend. A further, and perhaps a somewhat aspirational, recommendation would be offering such classes at school level, i.e. before students enter the university.

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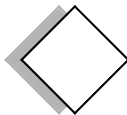
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Appendix

Information Seeking Behaviour Questionnaire

The following questions are for understanding your behaviour when you look for information. Please answer all questions. Thank you.

- 1 - Which college are you studying at?
 - A - Business Administration
 - B - Engineering
- 2 - What is your status?
 - A - I am a freshman (First year student)
 - B - I am a sophomore (Second year student)
 - C - I am a junior (Third year student)
 - D - I am veteran (More than 4 years at college)
- 3 - What is your gender?
 - A - Male
 - B - Female
- 4 - Where do you access computers (Check all that apply)
 - A - Home
 - B - College
 - C - Library
 - D - Office
 - E - Internet cafe
- 5 - How do you feel when you hear the word "research"?
 - A - I feel terrible.
 - B - I don't know what is waiting for me.
 - C - I think something interesting is waiting for me.
 - D - I get excited and look forward to it.
- 6 - I would rather choose my own research topic.
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Disagree
 - E - Strongly disagree
- 7 - How do you usually find your resources? Please rank them from 1-4
 - A - I use the library
 - B - I use the Internet
 - C - I ask teachers
 - D - I ask a colleague/friend

How good is your knowledge of

- 8 - English
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 9 - computers and Internet
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 10 - using a **library** catalogue
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 11 - using a database (print/online/CD-ROM)
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 12 - using search engines (like Google)
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 13 - using a directory such a telephone directory (print/online/CD-ROM)
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak

Your major problems in conducting research are

- 14 - finding somebody to help me
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 15 - finding resources
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 16 - selecting from the many resources I find
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 17 - writing the body of the research
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 18 - writing bibliographies (list of references)
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 19 - the time writing a research paper takes
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree

You believe that

- 20 - reading footnotes and getting information from them helps writing a better research paper
 - A - Strongly agree
 - B - Agree

- C - Indifferent
- D - Strongly disagree
- 21 - Arabic resources are as useful for my research as English resources
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 22 - the Internet would be a better source if there were more materials in Arabic
 - A - Strongly agree
 - B - Agree
 - C - Indifferent
 - D - Strongly disagree
- 23 - the materials on the Internet are
 - A - extremely reliable
 - B - reliable
 - C - somewhat reliable
 - D - unreliable
 - E - extremely reliable

You rate your ability to _____ when you CANNOT find the results you want using a search engine

- 24 - change or modify the keywords
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 25 - use the advanced search facility
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 26 - use Boolean operators (like AND or NOT)
 - A - Excellent
 - B - Very Good
 - C - Good

- D - Fair
- E - Weak
- 27 - try another search engine
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 28 - get into a relevant mailing list and ask for clues
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak
- 29 - get into a relevant chat room and ask for clues
 - A - Excellent
 - B - Very Good
 - C - Good
 - D - Fair
 - E - Weak

سلوك البحث عن المعلومات لطلبة كليتي إدارة الأعمال والهندسة بجامعة الكويت

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ملخص: نظراً لانتشار «الإنترنت» أداة للبحث في وقتنا الحالي، فقد أعدت هذه الدراسة، وهي تهدف إلى تعرف نمط السلوك المتبع لطلبة كليتي إدارة الأعمال والهندسة بجامعة الكويت في جميع المعلومات بهدف البحث أو الدراسة. إن الأداة المستخدمة في بحثنا الحالي كانت استبانة وزعت على الطلبة الذين سجلوا في المقرر الإلزامي للغة الإنجليزية (كتابة بحوث) لكليتي إدارة الأعمال والهندسة بجامعة الكويت، واتضح أن معظم الطلبة قد أجمعوا على تفضيل استخدام «الإنترنت» أداة لجمع المعلومات في إعداد الأبحاث مقارنة بالأدوات الأخرى، بغض النظر عن مدى إلمامهم باللغة الإنجليزية أو معرفتهم باستخدام الحاسب الآلي. وبعد النتائج التي توصل إليها أوصت الدراسة بضرورة إضافة مقرر في علوم استخراج المعلومات بواسطة «الإنترنت»، وذلك لطلبة المدارس والجامعات.

المصطلحات الأساسية: البحث عن المعلومات، سلوك البحث عن المعلومات، الاحتياجات إلى المعلومات، السلوك، تطبيق التكنولوجيا، تكنولوجيا المعلومات، اللغة الإنجليزية للأغراض التخصصية (إدارة الأعمال)، اللغة الإنجليزية للأغراض التخصصية (الهندسة)، اللغة الإنجليزية للأغراض التخصصية (إدارة الأعمال مقارنة بالهندسة).

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