

Comparative Study of Internet Usage in Educational Institutes: The Jordanian Hashemite University as a Case Study

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ABSTRACT

Internet usage is considered one of many indications of advancement in the educational institutes. Nowadays, the Internet provides billions of webpages and becomes the information superhighway. The usage and intentions are varied among users where billions of people daily access the internet for several purposes; scientific research, entertainment, downloads files, chatting...etc. In this paper, we are trying to verify the students' as well as the staff usage of the Internet. Many weblog files are daily generated in Web servers of the Universities. We have selected a Jordanian Hashemite University (HU) as a case study. Samples of the weblogs files are collected to be analyzed and studied. A special program is designed based on JAVA to extract the required data from these files. The results show that social network and education websites are the most accessed websites by both students and staff. The results and analysis of study carried out are provided to highlight the differences between the web usage by the staff and that by the students.

Key words: internet usage, web query, learning via internet.

1 INTRODUCTION

The Web is now a major source of information for many students in the world. Millions of Web queries are posed daily just from the Users in the Hashemite University (HU). Students can search the Web via many different search engines that use various search algorithms and techniques (Google, Bing and Yahoo, they give services to search for information. Internet is a multipurpose tool with numerous potentials. It helps students to communicate with other students abroad and so share each other's ideas, knowledge, experiences, and cultures and its improve skills

and capabilities of students, which help them in their study and in their life to get information as we need quickly and easily. All in all, the internet makes our life easier and more flexible.

Many students are educated through internet and learning media. It is the most obvious and inevitable element to experience this relation in the routine life too. It is clear that internet has a key role in human life. So we need to obtain a lot of important information about internet and its relation with other variables especially in educational contexts that are important for young generations. So the present study is an attempt to study the Internet use among Hashemite University students and staff.

In this paper, we study the effect of the academic environment factor on the internet usage in Hashemite University. We focused on what do they search for and their behavior in browsing the web pages, and also the amount of time they spent in browsing the Web. Many statistical operations will be applied on the extracted data and then the staff and students behaviors will be compared.

The main objectives of the study are:

1. To compare between students and staff in using the internet.
2. To find out the usage of the Web and average time they spent in browsing for both students and staff.
3. To find out the main focus of the students in HU when they use internet.

Section 2 provides related works for the study carried out. The methodology procedure, code procedure, statistical procedure and procedure of data collection are provided in Section 3. In section 4, results and analysis are given. Finally, the paper is concluded in Section 5.

2 RELATED WORKS

There are many studies that showed how students and staff use the internet and some make comparison between them. In [1], the authors studied students' Behavior toward the use of the Internet for learning at the University of Malaysia Sarawak. Their study discovers that in general students there had positive attitudes towards learning by the Internet. The students had the basic skills in using the Internet and perceived the learning environment in the university conducive to the use of the Internet as a learning technique. But their study contains a small number of students only 88 second-year undergraduate students randomly selected and they used a questionnaire technique to collect the data.

The research in [2] studied the aim of the internet use and learning by the internet, the study included that the internet has become a complement part of college life and its used by almost 100 % among students. It was found that 36 percent of the students spent 1-10 hours per week on the Internet. In terms of activities online, sending/receiving e-mail topped the list, followed by reading news and finding sports information, searching for school-related work, chatting, searching for products and services, and downloading media file. Because of their online activities, students watched television less than they used. They used an online survey to collect the data and their study was not about a comparison, they just made a statistics for the data.

The work in [3] investigated the extent and level of Internet access as well as the use of electronic resources by undergraduate students in three Nigerian Universities. Ani's findings revealed that undergraduate students use the Internet extensively. However, access to the Internet in the university libraries, departments/faculties and university computer/ICT centers was grossly poor due to the infrastructure. The majority of the respondents relied on private, commercial Internet services, and cybercafés. It was also found that Internet Education for the respondents is needed for the use of electronic resources and databases.

The study carried out in paper [4] makes a comparison between novice and professional

web searchers based on students who have different web experience levels. The results come as expected it showed that professional web searchers are more powerful than novice in determining relevant web sites to their information needs.

The research in [5] studied the attitude of internet usage by staff and students in Shaheed Bhagat Singh College of Engineering & Technology, Ferozepur (Panjab). And they found that staff use the internet more than students (46.7% by staff and 36.7% by students daily use the internet). About 90% respondents use internet at their college. Furthermore, they found that Yahoo is the favorite search engine for both of them.

Paper [6] investigated the Internet usage by students of the University of Dar es Salaam. The results of the study found that most of the students not using the internet because there are no enough computers with internet access, lack of skills in internet use and slow speed of computers. They also found that most of students who used the internet did not use it for academic purposes. And they suggest providing more computers connected to the internet and that training should be given to the students on the use of internet.

3 METHODOLOGY

We divide our study into two parts: first, we study the most web categories visited by students and staff and make a comparison between them based on how much each category opened by each one and we try to analyze the meaning these numbers, then we study the web queries and again we make a comparison between students and staff based on how much both use each one of the search engines and determine the most search engine used by both as follow:

3.1 Web categories:

A category is a classification for a website; in other words, it gives the purpose of the website. So we chose the most twentieth category used by both students and staff in HU. Table 1 shows examples for each category:

Table 1. Website examples for each category

Category	Examples
Web Ads	http://pagead2.googlesyndication.com http://ad.doubleclick.net
Text Translator	http://translate.google.com
Streaming Media	http://www.youtube.com http://www.dailymotion.com
Web Mail	http://mail.google.com http://www.hotmail.com
Online Shopping	http://www.amazon.com http://www.ebay.com
Search Engine	http://www.google.com http://www.yahoo.com
Public Information	http://www.google-analytics.com http://dw.weather.com
Forum	http://www.fadaeyat.net http://3asq.com
Art/Culture	http://www.r-mbd3.com http://www.ugaidaat.com
Business	http://crl.microsoft.com http://ap.ff.avast.com
social network	www.facebook.com www.twitter.com
general news	http://www.sarayanews.com http://jordanzad.com
Games	http://arcadescool.com http://www.freegames88.com
Chat	http://forums.7obek-m.com http://www.girls-top.net
Entertainment	http://images.farfesh.com http://cdn-the-2.musicradio.com
Sport	http://www.kooora.com http://maktoob.sports.yahoo.com
Education	www.hu.edu.jo http://ar.wikipedia.org
Software/hardware	http://www.newsgator.com http://crl.microsoft.com
Wiki	http://azpot.blogspot.com http://www.blogger.com
Job search	http://www.mwarid.com http://www.indeed.com

Computer center in Hashemite University provide us by the needed data from the main server, and data collected date is from [21/10/2013 to 11/11/2013] in two folders one for students and the other for staff.

The study then made for students and staff and we count number of times they opened each one of the categories and we used these numbers to calculate (summation, average, minimum and maximum) values using Microsoft excel.

3.2 Java platform:

In this study we use Java technology as both a programming language and a platform [7][8]. The Java programming language is a high-level

language that can be characterized by all of the following:

- Simple
- Object oriented
- Distributed
- Dynamic
- Architecture neutral
- High performance

Java programming language can do:

1. Your programming language is object oriented, yet it's still dead simple.
2. Your applications are robust because the Java runtime environment manages memory for you.
3. Your development cycle is much faster because Java technology is interpreted. The compile- link-load-test-crash-debug cycle is obsolete--now you just compile and run.
4. Your applications are adaptable to changing environments because you can dynamically download code modules from anywhere on the network.

A platform is the hardware or software environment in which a program runs. The most of popular platforms are Microsoft Windows, Linux, Solaris OS, and Mac OS"8". Figure 1 presents a flowchart for a clear view for the code processes.

The following is an analysis of the flowchart given in Figure 1:

- Method read from a .txt file:
It's a method we use in our program to read the data from several files and prepare a text file for each file to print the output on it.
- Format query:
Our study need a clear data divided into five categories (data, time, IP address, web sites and websites classifications), so we use format query method to perform these fragment.
 - *Time and Date:*
There is a unique and constant form represent date and time in between a square blocks ([..]), date and time separated by a colon.

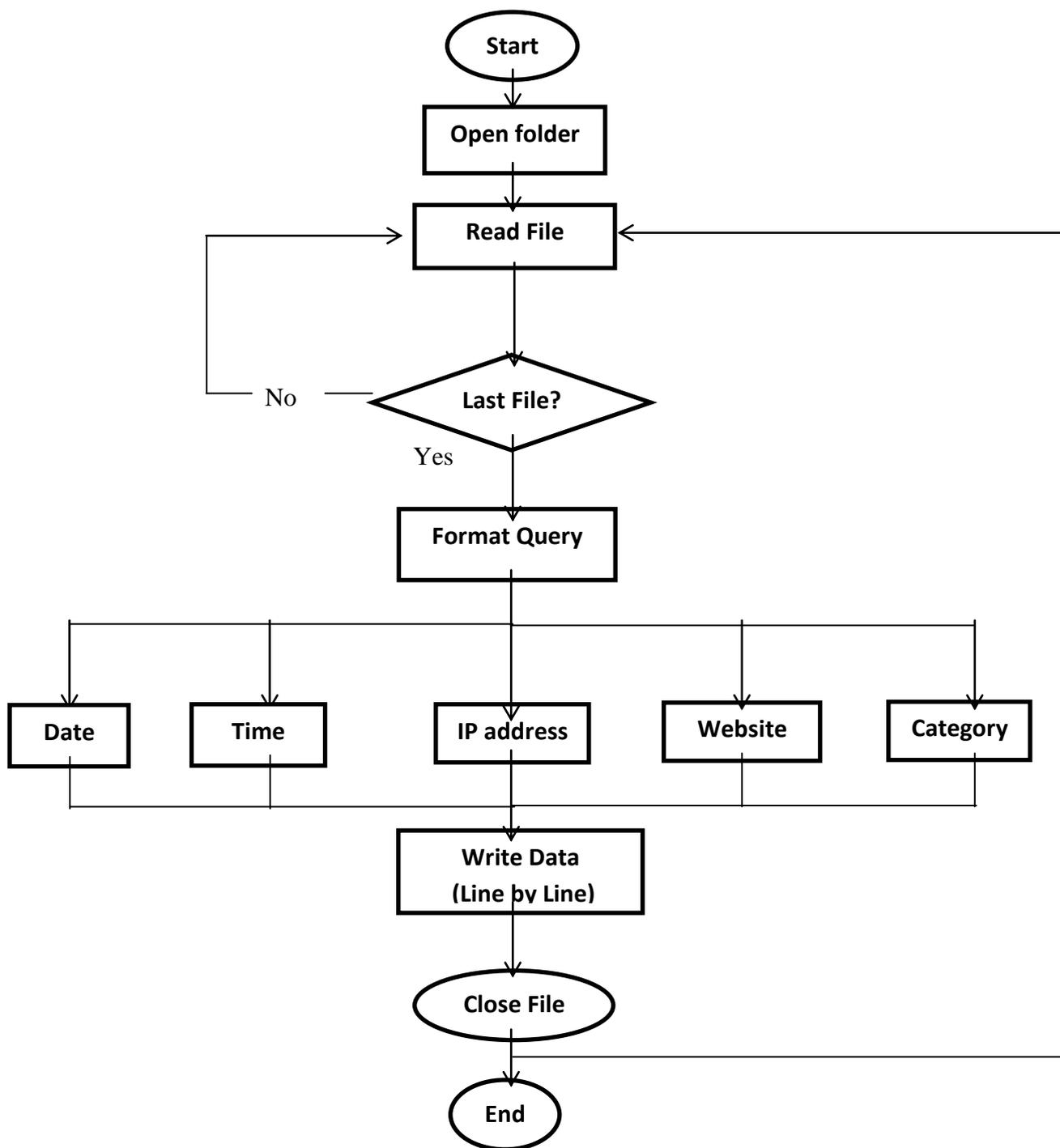


Figure 1. A flowchart for a clear view for the code processes

- *IP address:*
We use a string bring IP address method to clear the IP and return the IP address we need to an ".txt" file.
- *Web site (URL):*

- We use a string bring website method which return the web site we need and the domain name (.com .net .org .gov .edu.jo .info) for each website.
- *Category:*
Each website has its category for example:

- www.facebook.com it's a social networking
- www.google.com it's a search engine category
- www.hotmail.com it's a web mail category
- www.hu.edu.jo it's an education category
- www.youtube.com it's a streaming media category

▪ Write file:

Its takes the outputs and print it like the following:

Date	Time	IP address	Website(URL)	category
03/Nov/2013	11:29:50	10.1.1.20	http://hu.edu.jo	education

4 RESULTS AND DISCUSSIONS

4.1 category based study

We have determine the most twentieth categories used by students and staff in each day and the summation, average, maximum and minimum numbers for each category, now we will analyze the most seventh category used by charts as follow:

1) Social network :

Social network is the most dominated usage of the Internet in our community it can be used for several purposes:

- Entertainment
- Business
- Chatting
- Exchange mutual benefit.... etc.

Nowadays everyone wants to be a member of these websites. Figure 2 shows the difference between students and staff in using social network category:

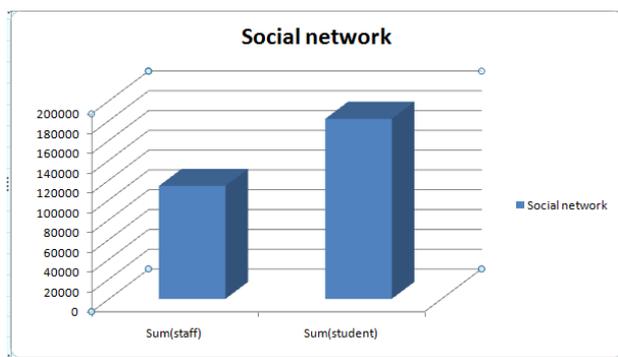


Figure 2. The difference between students and staff in using social network category

It is seen that student uses the social network sites more than the staff this is because the social network features attract this age group assuming that the student is between 18-24 year therefore the student will use the social network sites more often than the staff that will be interesting in this kind of websites in less subjects than the student but we must say that both of them use these web sites frequently and use them in many purposes.

2) Education:

Online education websites have a primary importance nowadays, there are a several educational websites such as (Courses, Degrees, Resources, E-Learning, Science, Schools, Worksheets and Homeschool) they have unlimited usage in our daily life for example children may use it for game and learn from this game, housewives can use it in homeschooling, Students can use it for courses that they are need. Figure 3 shows the difference between students and staff in using education category:

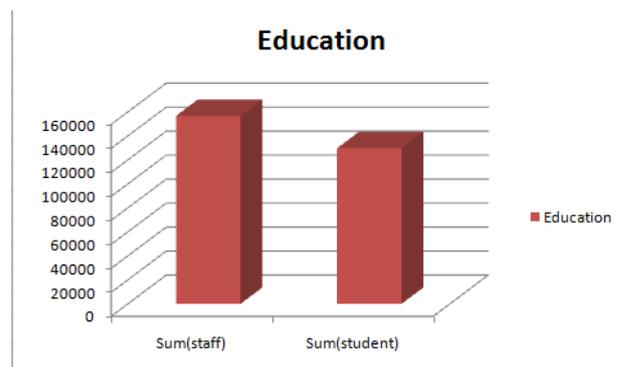


Figure 3. The difference between students and staff in using education category:

Staff use educational websites more than student and that's maybe because the staff need to increase their experiences by taking a course online or if they need something relevance to their work they use these web sites to refresh their memory and if the staff want to change their work they need to learn something new they will use these websites, this tell us that why the interest of the staff in this website is more than the student who will use it in a limit use.

3) General news:

Nowadays, In light of recent developments in the world, people need to communicate with the rest of the world to get information. News are used for several purposes for example (weather,

political, sports, economical ... etc.). Figure 4 shows the difference between students and staff in using general news category:

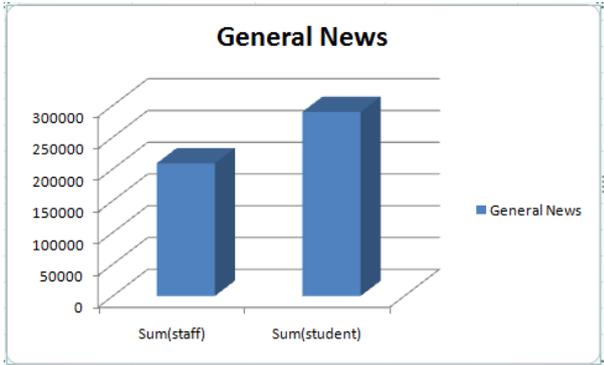


Figure 4. The difference between students and staff in using news category

Every one need to know what is happening in the world and it seems like the student open these kinds of websites. In our research we noticed that website is the most usage category it maybe because the situation of the world especially in the Middle East. Student may search for sport, political or any other titles as we talked before and thus for the staff.

4) Entertainment:

Entertainment is defined as a form of activity that holds the attention and interest of an audience these activities include (Music, Movies, Magazines, Games ... etc.)

In Figure 5, the differences between students and staff in using entertainment category are clearly shown:

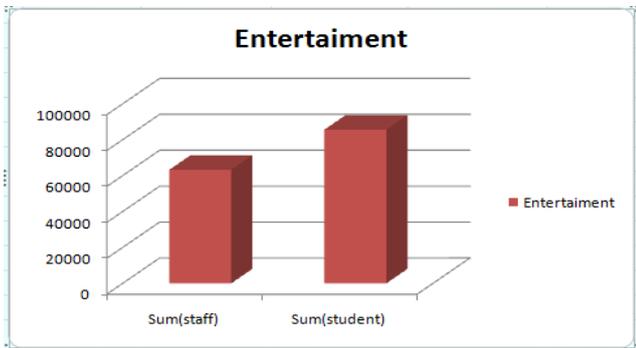


Figure 5. The difference between students and staff in using entertainment category

Student in their break need to spend their times they use this website for that, student use these websites more than the staff because that the

student may have a long time in the contrary of the working staff.

5) Business:

Business web site are used for several subject related to a company or organization. People may use these websites for several things for example (work, trading, commerce ...etc.). Figure 6 shows the difference between students and staff in using business category

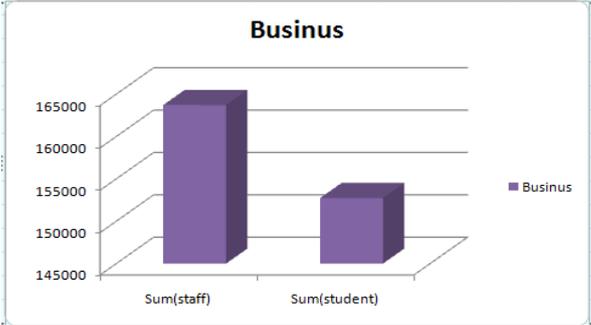


Figure 6. The difference between students and staff in using business category

Staff need to deal with organization or other companies continuously for multi reasons in the contrary of the students. And that's why we can see that the staff may use this website more than student.

6) Web Mail:

Email is a way to communicate with people in a fast and easy way the usage of the web mail can be for lot of things as people may contact each other by e-mail, companies can get employees CV's and tender, student may use it to send his homework or project to the instructor and software and websites use it for registration purposes...etc. Figure 7 shows the difference between students and staff in using web mail category

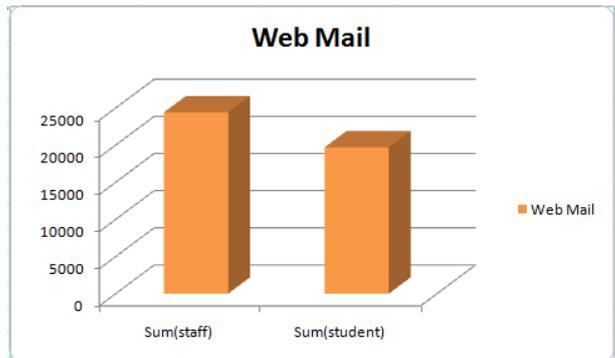


Figure 7. The difference between students and staff in using webmail category

In every companies a manger need to make a connection with his employee or the employee need to interact to each other nowadays this can be happened by e-mail. So the staff will use his email more than the student who will use it in a limited way as we talked before.

7) Search engine:

The human need for information has no limit. They need the information fast and accurate, Because of that there is so many Searching Engine Companies (such as Google, Bing, Yahoo, MSN ...etc.) compete to provide the information as fast as they can without forgetting the accuracy. Figure 8 shows the difference between students and staff in using search engine category:

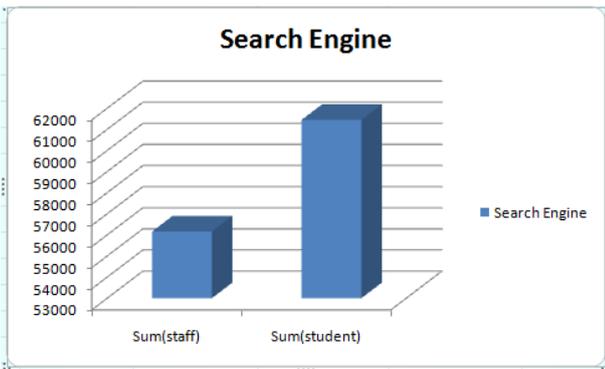


Figure 8. The difference between students and staff in using search engine category

Student use search engine more than the staff, they maybe search for subject related to the courses or search to make a report or a research in the contrary of the staff will use it in a less ways maybe related to work. Finally, figure 9 shows all previous categories. It is depicted that the news category receives more visits by students and staff.

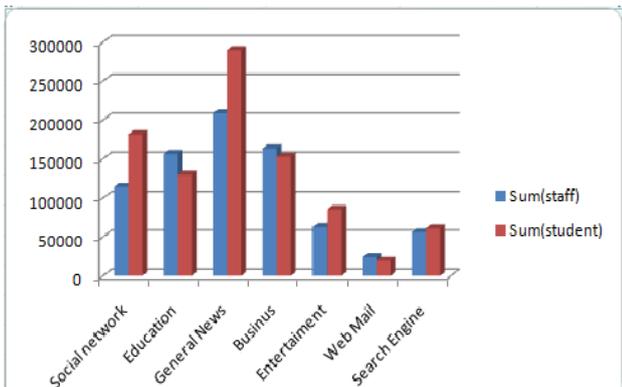


Figure 9. The difference between students and staff in using all categories

4.2 Web Queries based study

We made another code to study web queries and this code contain counters for the number of queries and the number of each search engine used, the figures below shows these numbers and the charts show the difference between students and staff. It is to be noted that we have included Facebook, twitter and eBay in our research because of the importance of this websites in our society nowadays.

Figure 10 shows usage of each search engine. It is clear that Google search engine is the most search engine used by students and staff:

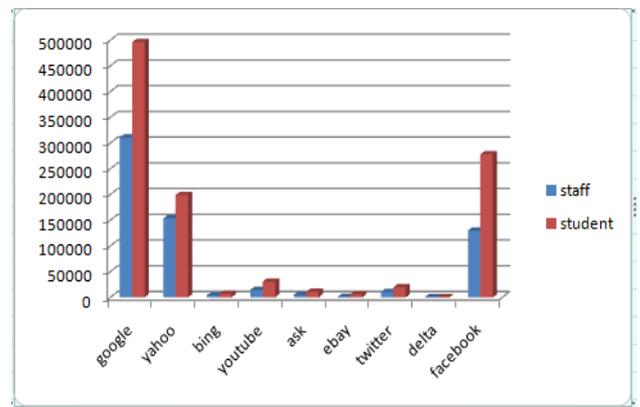


Figure 10. The number web queries of each the well known search engines

4.2.1 Students' queries:

There are more than million queries for students, and during our study for these queries we notice that most of the queries was for academic purpose, research, and most of the students use (Native) Arabic language to search for information they needed. Table 2 shows the most five queries searched for by students and the English translation for these queries.

Table 2. the most five queries searched for by students and the English translation

i	The query (native arabic)	English translation
1	شرح	Explanation of
2	دراسات عن	Studies for.....
3	موقع الجامعة الهاشمية	Hashemite University website
4	موقع	Website of.....
5	ازياء شتوية ٢٠١٤	fashion of winter 2014

4.2.2 Staff's queries

The usage of search engines by staff is different of students usage, they have a different interest, because of that there queries are different. So some of their search for:

- Positive and negative politeness.
 - Jordan engineers association.
 - Alwakeelnews.
 - Structured finance and risk management.
 - Psidium guajava antibacterial.
 - وظائف في الخليج.
- We notice that the most search engine used for students and staff is google, and that the least search engine used for students and staff is delta.
- Also, we notice that there is a huge difference in the total number of queries between them only (629507) for staff and a (1046422) for students.
- Also, we found that the staff uses English language when searching the web and students use Arabic language in searching.

5 CONCLUSIONS AND FUTURE WORK

The behavior of using internet in Jordanian Hashemite University as an example of educational institute had been studied among students and staff and a comparison between them has been carried out. The data extracted from the servers of the ICT center had been analyzed. A special code had been developed to extract the data and to find some statistical analysis on it. It had been concluded that most of the students use native language (arabic in our case study) for searching while staff looks more familiar with searching by English language, and we found that staff try to search and access educational category websites more than students which may be caused by the fact that the students are not trying to search for more information than they have in their courses to increase their knowledge. We notice a very significant result that students and staff open some websites that are not allowed to open in the university and these websites blocked by the

provider of the internet in the university (computer center) as Facebook, YouTube, Twitter,.....etc. In our future work; we look forward to increasing the number of queries and thus the space of the study to involve more Jordanian universities.

6 REFERENCES

- [1]. Hong, K. S., Ridzuan, A. A., & Kuek, M. K. (2003). Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia. *Educational Technology & Society*, 6(2), 45-49.
- [2]. Ruzgar, N. S. (2005). A research on the purpose of Internet usage and learning via Internet. *The Turkish Online Journal of Educational Technology*, 4(4), 27-32.
- [3]. Ani, O. E. (2010). Internet access and use: A study of undergraduate students in three Nigerian universities. *The Electronic Library*, 28(4), 555-567.
- [4]. Lazonder, A.W., Biemans, H.J.A. and Wopereis, I.G.J.H. (2000), "Difference between novice and experienced users in searching information on the World Wide Web", *Journal of the American Society for Information Science*, Vol. 51 No. 6, pp. 576-81.
- [5]. Rajeev K, Ampritpal K (2004). Use of Internet by Teachers and Students in Shaheed Bhagat Singh College of Engineering and Technology: A Case Study. *J. Libr. Inf. Sci.* 29(1&2), 81-94.
- [6]. Luambano, I., & Nawe, J. (2004). Internet use by students of the University of Dare es Salaam. *Library Hi Tech News*, 21(5), 13-17.
- [7]. <http://www.ebizmba.com/articles/search-engines>The eBusiness Knowledgebase: eBizMBA is an eBusiness Knowledgebase that helps you find the web's best answers to your online business questions.
- [8]. <http://docs.oracle.com/javase/tutorial/getStarted/intro/definition.html> www.oracle.com/technetwork/java/intro-141743.html.