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Home	Table of Contents	Titles & Subject Index	Authors Index
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Internet and Its Use in the Engineering Colleges of Punjab, India: A Case Study

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Abstract

The aim of this study was to analyze the use of the Internet and related issues among the teachers and students of engineering colleges of Punjab, India. A well structured questionnaire was distributed among the 960 teachers and students of all the engineering colleges of Punjab. The response rate was 84.2 per cent. The present study demonstrates and elaborates the various aspects of Internet use such as, frequency of Internet use, most frequently used place for Internet use, purposes for which the Internet is used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the Internet facilities provided in the colleges. The result of the survey also provided information about the benefits of the Internet over conventional documents. It was found that the Internet had become a vital instrument for teaching, research and learning process of these respondents. Some suggestions have been set forth to make the service more beneficial for the academic community of the engineering colleges under study.

Keywords

Internet use, Teachers, Students, Punjab, India

Introduction

In the era of networked information, Internet, the largest worldwide network of networks, has emerged as the most powerful tool for an instant access to information. Information is now just a 'finger touch' distance away from the user and it would not be inappropriate to say that the Internet has become the biggest global digital information library which provides the fastest access to the right kind of information in nano-seconds of time to end-user at any time and at any place in the world. The Internet has become the most extensively used information source that empowers the average person to get in roaming with the latest information. Today's users can no longer depend on conventional information sources to cope with the latest developments in their respective fields.

The Internet has emerged as a powerful educational tool. With the increasing impact of information and communication technologies on higher education, all those concerned with higher education are attempting to grasp how ICT could help in modernizing the process of teaching, learning and research. With the advent of the Internet, following dilemma arise in higher educational system:

- learner is not dependent on teacher for interaction; and
- teachers can give lectures virtually to unknown learners.

So, in this era, teachers and students can carry forward their work on the Internet in ways that are similar to and tightly intertwined with the traditional ways that they learn, teach and study in libraries, classrooms, laboratories, seminars, conferences, etc. The Internet can provide access to essentially unlimited resources of information not conventionally obtainable through other means.

Today, Engineering colleges are playing an important role in imparting technical education. The Engineers, who are the outcomes of these colleges, require the latest and pinpointed information in their respective fields. Due to the high cost of engineering information resources, developing countries cannot provide these resources to their users. But the Internet with its advantages, make the way for the developing countries to access information at a very low cost.

Literature Review

This part is concerned with the review of literature directly related to the present study. It is in two parts viz. review of foreign literature and review of Indian literature. A review of the literature reveals that the teachers and the students are the most frequent users of Internet. They use Internet for teaching, learning and for research purposes.

Review of Foreign Literature

[Becker](#) (1998) conducted a study on the Internet use by 2250 teachers from public and private schools in the U.S. The study revealed that 90% of the teachers had Internet access. More than half of the teachers (59%) had Internet access at home. A majority of the teachers (68%) used Internet to find information resources for preparing their lessons. [Singh](#) (1998) conducted a research study on the use of Internet by the librarians in Malaysia. The main findings of the study indicated that 90% of the respondents used the Internet for work related purposes. Most of the respondents were recent users. [Voorbij](#) (1999) examined the use of the Internet amongst students and academicians in the Netherlands. A questionnaire was distributed among 1000 members of the academic community and three focus-group interviews were also held with faculty members. The study revealed that the Web was being used primarily to search general, factual, ephemeral or very specific information. The study also revealed that students and academicians faced many problems while searching the Web. [Williams](#) (1999) reported the use of information technology and the Internet in his project entitled "Information Technology in Michigan: Adult and Teen Survey Report." The results indicated that the majority of the respondents (72%) used the Internet at least once a week and 45% at least once a day.

Moreover, [Laite](#) (2000) surveyed 406 graduate and undergraduate students from Shippensburg University. The survey showed that 57.6% of the undergraduate students used the Internet 1-2 times per week and another 37.1% used it 1-2 times daily. More than 50% of the graduate students used Internet 1-2 times per week and 37.7% used it 1-2 times daily. The survey showed that the most used Internet service was e-mail. A hundred percent of the graduates and undergraduate students used e-mail service. [Nicholas et al.](#) (2003) conducted a study in the UK to examine the use of the web for health information

and advice. More than 1300 people were surveyed. The study showed that 66% of the respondents accessed the Internet from home, 28% from work place and the remainder (6%) used a combination of both work place and home. [Hanauer et al.](#) (2004) surveyed a diverse community college to assess the use of the Internet by the students for health-related information. The survey showed that although all the students surveyed had free Internet access through their community college, yet only 97% of the students reported having access to the Internet. The survey showed that 83% Internet users had access to the Internet at their home and 51% of the respondents accessed Internet at college or library. Eighty-one percent of the students reported to access the Internet most for college work and 80% for e-mail/chat. Men and women searched for health information in almost equal numbers.

A recent study by [Asemi](#) (2005) shows that all the respondents were using the Internet frequently because all faculties were provided connection to the Internet. It was revealed that the researchers of the university were getting quality information through the Internet. Fifty-five percent of the respondents searched for scientific information through the Internet because the university library had provided access to various databases and online journals for all the students and staff.

Review of Indian Literature

[Bavakutty and Salih](#) (1999) conducted a study at Calicut University, which showed that students, research scholars, and teachers used the Internet for the purpose of study, research and teaching respectively. The purposes of Internet use were: sending and receiving e-mails in connection with academic requirements, making a search on library catalogues, downloading images and communication with the peer. [Kooganurmath and Jange](#) (1999) conducted a study, which revealed that a majority of the users used the Internet for communication, followed by the access to information. More than 70% of the users used it for higher studies and only 39% used it for discussions with peer groups. The most used services of Internet were e-mail, the Web, discussion forums, FTP and Telnet.

A study conducted by [Mahajan and Patil](#) (1999) revealed that the purpose of using Internet by research workers at Pune University was to conduct literature search; for students was to know curriculum based information; for teachers to find supporting information to write articles. [Naushad Ali](#) (2000) conducted a study at Aligarh Muslim University, Aligarh. The study showed that more than 50% of the study population was satisfied regarding the timings of the Internet service, but were not satisfied with staff's cooperation, and reservation facility. Majority of the respondents were not happy with the number of nodes available. [Chandran](#) (2000) conducted a study at S V University, Tirupathi, which showed that more than 25% of the respondents used the Internet for 2-3 times a week and more than 56% used it for accessing information. A majority of the respondents used the Web and e-mail services of Internet. The purposes of using Internet included communication and information gathering. The sources used for identifying information about Internet included website itself, journals and magazines, staff and newspapers. A majority of the respondents used general websites as compared to recreational and discipline oriented websites. [Amritpal Kaur](#) (2000) conducted a survey regarding the use of Internet facility at the Guru Nanak Dev University, Amritsar. The study indicated that all respondents used Internet for sending e-mail and 82% for Web. More than 60% of the respondents used Internet for primary information. 38% for secondary and only 15% used it for consulting OPACs. A majority of the respondents i.e. 75.6% faced the problem of slow Internet connectivity. All respondents used search engines to browse the required information. More than one third of the respondents typed the web address directly and only 1.5% used subscription databases. The results of the study further showed that more than 80% of the

respondents felt that in comparison to traditional documents, Internet was time saving, easy to use, more informative, more useful and more preferred.

[Kanaujia and Satyanarayana](#) (2003) conducted a study of the Science & Technology community of Lucknow city to assess the level of awareness and demand of web based learning environment among Science & Technology information seekers. The major findings of the study revealed that 49.2% users browsed the Web for more than 2 to 4 hours and 14% for more than 5 hours a day. The study further showed that 36.6% users consulted e-journals regularly on the Internet, 40.4% used Internet for consulting technical reports, 24.8% to find online databases and 10.4% for telnet service.

Recently, [Mishra, Yadav and Bisht](#) (2005) conducted a study to know Internet utilization pattern of the undergraduate students of G B Pant University of Agriculture and Technology, Pantnagar. The findings of the study indicated that a majority of the students (85.7%) used the Internet. Out of the Internet users 67.7% were male students and 32.3% female students. The findings of the study also showed that 61.5% of the males and 51.6% of the females used Internet for preparing assignments. A majority of the respondents i.e. 83.1% male and 61.3% female respondents indicated that they faced the problem of slow functioning of Internet connection.

Need for the Present Study

The ever increasing number of people accessing Internet coupled with recent explosion of information resources on the Internet, may have considerable implications for teaching, learning and research. Teachers and students are depending more and more on the Internet for their various educational purposes. The present survey is, therefore, an attempt to assess the effectiveness of Internet as an educational tool, and what role it actually plays in the educational system with special reference to the engineering colleges in the state of Punjab.

The Internet is an inseparable part of today's engineering educational system. Engineering colleges invest a good deal of amount on providing this facility to both the teachers and students. It is, therefore, important to find out up-to what extent they are utilizing this facility.

As engineering colleges provide Internet facility to both the teachers and the students and expect them to utilize it for education purposes, it is necessary to conduct a study to determine whether Internet is used for academic activities and how the Internet has influenced the academic efficiency of the target users. The study also explores the satisfaction level of the users with the Internet facility provided by the engineering colleges under study. The study has particularly been taken up to assess the benefits of Internet over conventional documents.

Scope of the Study

The scope of the present study is limited to the following:

- The study includes only those engineering colleges which are engaged in imparting degree level courses in the field of engineering & technology.
- The study is primarily concerned with the engineering colleges functioning within the territorial jurisdiction of the State of Punjab (including Chandigarh), India and those that were established up-to January, 2003, and were duly approved by All India Council for Technical Education (AICTE).

In all, the study includes engineering colleges viz. 32 of Punjab ([Appendix I](#)).

Objectives

The present study is an attempt to find out the pattern of using the Internet by the students and teachers of Punjab State engineering colleges. The study was conducted with the following objectives:

- To study the use of the Internet by the teachers and students in engineering colleges under study.
- To study the various Internet resources and services used by the respondents on the Internet for various activities of teaching, learning and research.
- To identify the different purposes for which the Internet is used by teachers and students.
- To examine the impact of Internet on the various activities like teaching, learning and research.
- To find out the problems faced by the respondents while using the Internet.

Research Methodology

Students registered in the Bachelor of Technology (B.Tech.) in various disciplines and teachers at the engineering colleges of Punjab represented the target population for this study. The questionnaire method has been employed to collect the data for the present study and to select the sample population, random sampling method has been used. The sample was random in the sense that the sample for the present study consisted of teachers and students selected randomly from 32 engineering colleges of Punjab (including Chandigarh).

Thirty respondents were selected randomly from each college taking at least five (two teachers and three undergraduate students) from each branch of each college under study. Accordingly, 960 questionnaires (i.e. $32 \times 30 = 960$) were distributed among the teachers and undergraduate students of the engineering colleges under study out of which 808 (i.e. 334 from the teachers and 474 from the students) were received back duly filled in.

Analysis & Discussion

Distribution of Respondents according to Status

Teachers : 334 (41.3)

Students : 474 (58.7)

Total : 808 (100.0)

(The figures in the parenthesis indicate the percentage)

Branch-wise Break-up of Respondents

Table 1: Branch-wise Break-up of Respondents

Branches	Teachers	%	Students	%	Total	%
Electronic Engineering	62	39.7	94	60.3	156	100.0
Computer Science & Engineering	60	39.7	91	60.3	151	100.0
Mechanical Engineering	52	40.9	75	59.1	127	100.0
Information Technology	42	40.0	63	60.0	105	100.0
Electrical Engineering	40	40.0	60	60.0	100	100.0
Architecture Engineering	14	36.8	24	63.2	38	100.0
Chemical Engineering	12	38.7	19	61.3	31	100.0
Instrumentation Engineering	12	40.0	18	60.0	30	100.0

Applied Sciences	20	100.0	-	-	20	100.0
Production Engineering	8	40.0	12	60.0	20	100.0
Textile Engineering	4	40.0	6	60.0	10	100.0
Industrial Engineering	4	40.0	6	60.0	10	100.0
Bio-Technology	2	40.0	3	60.0	5	100.0
Food Technology	2	40.0	3	60.0	5	100.0
Total	334	41.3	474	58.7	808	100.0

Use of Internet

1. Experience of Internet use

It can be inferred from table 2 that 30.7% of the academic community have 2 - 4 years of experience in using the Internet, followed by 1 - 2 years of experience in using the Internet with 24.9% response. Table 2 also depicts that 24% of the respondents have started using the Internet for more than 4 years. Where as 11.9% of the respondents have 6 months - 1 year of experience in using the Internet, and 8.5% of the respondents started using the Internet for less than six months.

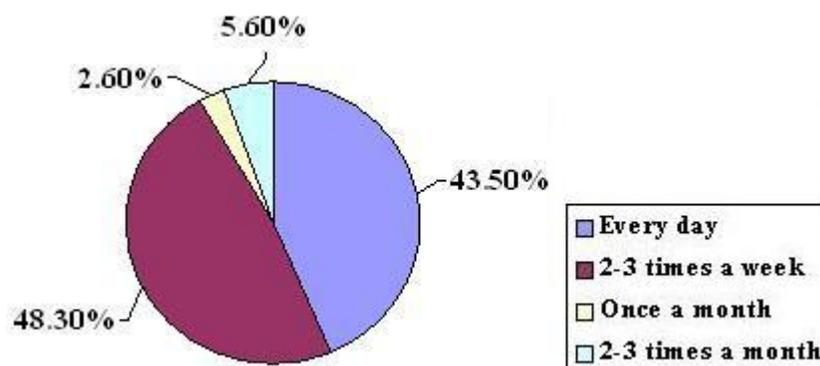
Table 2: Experience of Internet use

Experience of Internet use	Teachers	%	Students	%	Total	%
Less than 6 months	20	6.0	49	10.3	69	8.5
6 months to 1 year	27	8.1	69	14.6	96	11.9
1 to 2 years	71	21.3	130	27.4	201	24.9
2 to 4 years	104	31.1	144	30.8	248	30.7
More than 4 years	112	33.5	82	17.3	194	24.0
Total	334	100.0	474	100.0	808	100.0

2. Frequency of Internet use

In order to assess the frequency of using the Internet services, the time gap has been classified into four different categories (see Figure 1). It has been found that 48.3% of academic community uses the Internet 2-3 times a week. More than 40% of the respondents use the Internet every day and 5.6% for 2-3 times in a month. Only 2.6% of the respondents use it once in a month. On average the majority of the users from all the engineering colleges of Punjab use the Internet almost once in a week.

Figure 1: Frequency of Internet use



3. Amount of Time spent on the Internet

Table 3 depicts that 37% of the respondents use the Internet for 2-4 hours a week, 21.8% for 5-6 hours, 16.6% for 7-9 hours, 9.4% for 10-20 hours and 9.2% for more than 20 hours. Only 6% of the respondents have indicated that they use the Internet for less than 2 hour in a week.

Table 3: Amount of Time spent on the Internet

Amount of Time	Teachers	%	Students	%	Total	%
Less than 2 Hours a week	17	5.08	32	6.8	49	6.0
2 - 4 Hours a week	115	34.4	184	38.9	299	37.0
5 - 6 Hours a week	73	21.9	103	21.7	176	21.8
7 - 9 Hours a week	59	17.7	75	15.8	134	16.6
10 - 20 Hours a week	34	10.2	42	8.9	76	9.4
More than 20 Hours a week	36	10.8	38	8.0	74	9.2
Total	334	100.0	474	100.0	808	100.0

4. Location of Internet use

Table 4 highlights the location from where the Internet is mostly accessed by the teachers and students. A majority of the respondents i.e. 70.1% access the Internet at their college, 18.5% access the Internet at their homes and 11.4% choose other places to access the Internet.

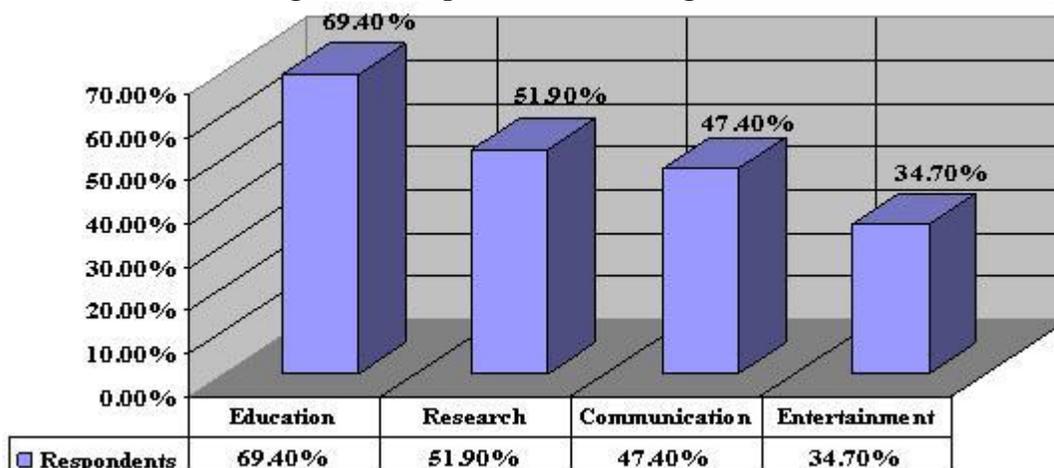
Table 4: Most frequently used location of Internet use

Location of Internet use	Teachers	%	Students	%	Total	%
At College	233	69.8	333	70.3	566	70.1
At Home	73	21.8	77	16.2	150	18.5
At Other Place	28	8.4	64	13.5	92	11.4
Total	334	100.0	474	100.0	808	100.0

5. Purposes for Browsing Internet

Figure 2 depicts that a majority of the respondents i.e. 69.4% use the Internet primarily for education purpose, 51.9% for research purpose, 47.4% for the communication purpose and 34.7% of the respondents also admit that they use the Internet for entertainment purpose.

Figure 2: Purposes for browsing Internet



6. Use of Internet resources

Table 5 indicates that 54.3% of the respondents use the Internet for consulting technical reports, 42.3% for e-books, 38.5% for e-journals, 31.7% for databases 30.4% for conference proceedings, 25.5% for theses and dissertations. The number of respondents who use the Internet for consulting standards and patents is very small i.e. 12.6%.

Table 5: Use of Internet resources

Use of Internet resources	Teachers	%	Students	%	Total	%
Technical Reports	196	58.7	243	51.3	439	54.3
E-books	155	46.4	187	39.5	342	42.3
E-journals	121	36.2	190	40.1	311	38.5
Databases	112	33.5	144	30.4	256	31.7
Conference Proceedings	132	39.5	114	24.1	246	30.4
Theses and Dissertations	123	36.8	83	17.5	206	25.5
Standards and Patents	49	14.7	53	11.2	102	12.6

7. Use of Internet services

Table 6 exhibits that e-mail is the most popular service among the respondents. All of the respondents use the Internet for sending e-mail followed by World Wide Web (99.7%) and 73.6% of the respondents use the Internet for chatting and 50% for frequently asked questions. The use for the other services such as list servers/ discussion groups, archie, bulletin board, telnet, FTP ranges between 11.5% to 35%.

Table 6: Use of Internet services

Use of Internet services	Teachers	%	Students	%	Total	%
Electronic Mail (E-mail)	334	100.0	474	100.0	808	100.0
World Wide Web	333	99.7	469	98.9	802	99.3
Chatting	238	71.3	357	75.3	595	73.6
Frequently Asked Questions (FAQs)	174	52.1	228	48.1	402	50.1
File Transfer Protocol (FTP)	127	38.0	156	32.9	283	35.0
Telnet	105	31.4	136	28.7	241	29.8
Bulletin Board Services (BBS)	83	24.9	131	27.6	214	26.5
Archie	50	15.0	66	13.9	116	14.4
List Servers/ Discussion Groups	39	11.7	54	11.4	93	11.5

8. Purposes of E-mail

Table 7 indicates that 77% of the respondents use e-mail for personal communication, 76.1% for academic purposes and 37% for pleasure purposes.

Table 7: Purposes of E-mail

Purposes of E-mail	Teachers	%	Students	%	Total	%
Personal	257	77.5	366	77.2	623	77.0
Academic	265	79.3	350	73.8	615	76.1
Pleasure	118	35.3	181	38.2	299	37.0

9. Problems faced by the Users

It can be inferred from Table 8 that using the Internet is not free from problems. The most common problem faced by the users is that of slow Internet access speed which takes a lot of their slot time to retrieve the relevant information.

Table 8: Problems faced by the Users

Use of Internet services	Teachers	%	Students	%	Total	%
Slow access speed	218	65.6	343	72.4	561	69.4
Difficulty in finding relevant information	58	17.4	114	24.1	172	21.3
Privacy Problem	61	18.3	86	18.2	147	18.2
Overload of information on the Internet	67	20.1	71	15.1	138	17.1
It takes too long to view/ download pages	43	12.9	84	17.7	127	15.7

10. Benefit of Internet over Conventional Documents

Table 9 exhibits that more than 80% of the respondents feel that in comparison to conventional documents, the Internet is easy to use (91.6%), more informative (89.1%), time saving (88.1%) and more useful (82.5%) and 76.1% of the respondents also admit that it is less expensive in comparison to conventional documents.

Table 9: Benefit of Internet over Conventional Documents

Benefit	Teachers	%	Students	%	Total	%
Easy to use	309	92.5	431	90.9	740	91.6
More Informative	304	91.0	415	87.5	719	89.1
Time saving	300	90.0	412	86.9	712	88.1
More useful	286	85.6	381	80.3	667	82.5
Less expensive	263	78.7	351	74.0	614	76.1
More preferred	239	71.5	310	65.4	549	68.4

11. Influence of the Internet on Academic Efficiency

According to table10, 56.5% of the respondents think that due to availability of latest and instant access to information on the Internet, dependency on Internet has increased. More than one third of the respondents feel that the Internet has improved their professional competence, and 14.1% respondents admit that the Internet has expedited their research process.

Table 10: Influence of Internet on Academic Efficiency

Influence of Internet	Teachers	%	Students	%	Total	%
Dependency on Internet has increased	190	56.9	267	56.3	457	56.5
Improved professional competence	139	41.6	151	31.9	290	35.9
Expedited the research process	46	13.8	68	14.3	114	14.1

12. User satisfaction with Internet facilities

Table 11 shows that only 31.1% of the respondents feel fully satisfied with the service, 52.2% partially satisfied and 16.7% least satisfied.

Table 11: User satisfaction with Internet facilities

Satisfaction with Internet facilities	Teachers	%	Students	%	Total	%
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Partially satisfied	169	50.6	253	53.4	422	52.2
Fully satisfied	126	37.7	125	26.4	251	31.1
Least satisfied	37	11.1	91	19.2	128	15.8
No comments	2	0.5	5	1.1	7	0.9
Total	334	100.0	474	100.0	808	100.0

Findings

Major findings of the survey are:

- The most frequently used places for accessing the Internet are the college (70.1%) and the home (18.5%).
- A majority of the respondents i.e. 69.4% use the Internet mainly for educational purposes and comparatively less number of respondents i.e. 34.7% use the Internet for entertainment purposes.
- A majority of the respondents use the Internet for consulting technical reports (54.3%), for reading e-books on the Internet (42.3%) and for consulting e-journals (38.5%).
- All the Internet users prefer e-mail facility. The World Wide Web comes next in order of preference.
- The most common problems faced by the majority of the respondents in surfing Internet relate to the inordinate delay in retrieving relevant information (69.4%) and difficulty in finding the relevant information (21.3%).
- Above 70% of respondents feel that the Internet is more useful, more preferred, more informative, easy to use, less expensive and time saving.
- More than 50% of the respondents feel that dependency on the Internet has increased.
- More than one third of the respondents feel that the Internet has improved their professional competence.
- More than 50% of the respondents are partially satisfied with the facilities provided by the engineering colleges.

Suggestions

Based on the findings of the study, the following suggestions are recommended to improve the use of the Internet among the academic community i.e. teachers and students of engineering colleges under study:

- The time of Internet service should be increased, if possible the service should be round the clock. So that users can maximum utilization of this service.
- The Internet facility should be extended to the hostels and rooms of the teachers.
- More computers with latest specifications and multimedia kit should be installed, so that users can use Internet telephony, video-conferencing, chatting and other useful services of the Internet.
- Some printers should be installed in the Internet sections of the colleges, so that the respondents can get print outs of their study material and other important documents at nominal rates.
- More efficient technical staff should be appointed and they should be present in the Internet section for expert advice.
- Electronic version of the journals should be subscribed by the library.
- Websites providing only entertainment should be locked so that students should not unnecessarily sit on computers.
- All the engineering colleges should have their own website, so that users can easily get the academic news and college's websites should be regularly updated.

Conclusion

The Internet facility has enabled the teachers and students to enhance their academic excellence by providing them the latest information and access to worldwide information. The present study has highlighted the existing situation of the Internet services provided by the engineering colleges of Punjab, India. The situation is not, however, very satisfactory from the library point of view. Only some engineering college libraries have Internet facility, and even this is not extended to the users. So, it should be extended to all the engineering college libraries. The information on the Internet is not usually available in an organized way and the users are unable to get pin pointed information from the Internet. In order to make the Internet more beneficial, the library staff who have acquired a good deal of efficiency in the collection, organization and retrieval of information should feel duty-bound to see that the users are able to obtain right information at the right time. For this, they should organize and classify the information on a website in such a way that the users are able to find easily the information they need for their studies and research purposes. The library services supplemented by Internet services can prove a great boon to the users in getting the right information at the right time.

The present study has concentrated on the most frequent users of Internet in the engineering colleges i.e. the teachers and the students. The scope of the study was limited to the engineering colleges of Punjab (including Chandigarh). There is a vast scope for future research in different types of users' behaviour and comparison of users' behaviour and attitudes towards the Internet.

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Appendix I
List of Engineering Colleges of Punjab under study

Sr. No.	Name of Engineering Colleges (Approved under AICTE)
1.	Adesh Institute of Engineering & Techonology, Faridkot
2.	Amritsar College of Engineering & Technology, Amritsar
3.	Baba Banda Singh Engineering College, Fatehgarh Sahib
4.	Beant College of Engineering & Technology, Gurdaspur
5.	Bhai Gurdas Institute of Engineering & Technology, Sangrur
6.	Bhai Maha Singh College of Engineering, Muktsar
7.	Chandigarh Engineering College, Mohali
8.	Chandigarh College of Architecture Engineering, Chandigarh
9.	Chitkara Institute of Engineering & Technology, Patiala
10.	College of Engineering and Management, Kapurthala
11.	D.A.V. Institute of Engineering and Technology, Jalandhar
12.	Dr. B.R. Ambedkar Regional Engg. College, Jalandhar
13.	GGs College of Modern Technology, Kharar, SAS Nagar
14.	Giani Zail Singh, College of Engineering & Technology, Bhatinda
15.	Guru Gobind Singh College of Engineering, Talwandi Sbo
16.	Guru Teg Bahadur Khalsa Institute of Engineering & Technology, Malout
17.	Guru Nanak Dev Engineering College, Ludhiana
18.	I.I.T.T. College of Engineering, Pojewal Distt., Nawanshahar
19.	Institute of Engineering & Technology, Ropar
20.	Lala Lajpat Rai Institute of Engineering & Technology, Moga.
21.	Lovely Institute of Technology, Distt. Kapurthala
22.	Ludhiana College of Engineering & Technology, Ludhiana
23.	Malout Institute of Management & Information Technology, Malout

24.	Punjab College of Engineering & Technology, Patiala
25.	Punjab Engineering College, Chandigarh
26.	Rayat Institute of Engineering & Information Technology, Nawanshahar
27.	S.B.S. College of Engineering & Technology, Ferozepur
28.	Sant Longowal Institute of Engineering & Technology, Longowal
29.	Shaheed Udham Singh College of Engineering & Technology, Mohali
30.	Sri Sai College of Engineering & Technology, Pathankot
31.	Sukhmani Institute of Engineering & Technology, Dera Bassi
32.	Thapar Institute of Engineering & Technology, Patiala

Appendix II Questionnaire I

Please Tick mark where necessary. Bio-data

Academic Qualifications

E-mail Address

Status Teacher Student Other

College Name and Address

Department (Please Tick whichever is applicable)

Applied Science	Chem Engg.	Computer Sci.	Electronic Engg.	Electrical Engg.	Ind. Engg.	Prod. Engg.	Mech. Engg.	Other (please specify)

A. General

Does your College have computers? Yes No

If yes, is there Internet connection? Yes No

B. Experience of Internet use

How often do you use Internet services? Every day 2 to 3 times a week

Once a month 2 to 3 times a month

C. Frequency of Internet use

How long have you been using the Internet?

Less than 6 months 6 months - 1 year 1-2 years 2-4 years

More than 4 years Other

D. Amount of Time spent on the Internet

On average, how many hours you spend in a week to use the Internet?

0 to 1 hours/week 2 to 4 hours/week 5 to 6 hours/week

7 to 9 hours/week 10 to 20 hours/week Over 20 hours/week

E. Location of Internet use

From which place do you most frequently use the Internet?

At college or work At home At other place

F. Purposes for Browsing the Internet

The purpose you mainly use the Internet is for?

Research Entertainment Education Communication

G. Use of Internet resources

Do you use Internet resources? Yes No

If yes, which of the following Internet resources you regularly consult?

(Check all that apply)

Conference Proceedings Engineering Databases E-books
Standards and Patents E-journals Technical Reports
Thesis and Dissertation Other

H. Use of Internet services

Please indicate your awareness of the services being provided following by Internet and give your preferences of using these services as 1, 2, and 3 . . . etc.

Sr. No.	Name of Services	Yes	No	Preference
1	E-mail			
2	WWW (World Wide Web)			
3	Telnet (Remote Login)			
4	FTP (File Transfer Protocol)			
5	Archie			
6	List Serve/Discussion Group			
7	BBS (Bulletin Board Services)			
8	FAQ (Frequently Asked Questions)			
9	Chatting			
10	Any Other			

I. Purposes of E-mail

You mainly use the E-mail for the purpose of
(Please tick whichever applicable)

Academic Personal Pleasure Other

J. Problems faced by the Users

What do you find to be the biggest problems in using the Internet?
(Please check all that apply)

- a) Slow access speed
- b) Difficulty in finding relevant information
- c) Overload of Information on the Internet
- d) It takes too long to view/download pages
- e) Privacy Problem
- f) Other

K. Benefit of the Internet over Conventional Documents

In your opinion, using the Internet as compared to use of conventional documents is:

(Tick all that apply)

Time saving or Time consuming
Easy to use or Difficult to use
More Informative or Less Informative
More Expensive or Less Expensive
More Useful or Less Useful
More Preferred or Less Preferred

L. Influence of the Internet on Academic Efficiency

How the use of the Internet has influenced your academic efficiency?

- a) Use of conventional documents has decreased
- b) Dependency on Internet has increased
- c) Expedited the research process
- d) Improved professional competence

M. User satisfaction with the Internet facilities

Up to what extent, are you satisfied with the Internet facilities provided by College Internet Section?

Fully Partially Least satisfied

N. Miscellaneous

Please write any other suggestions to improve/ for the betterment of Internet Services.

Thank you for your time and completing this questionnaire.

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