

# Tracking User Trends in a Class Website: An Explorative Study

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*The study evaluates whether a course website has met the objective of serving students 24 hours a day, 7 days a week. The study offers a perspective on the demands placed by web-enhanced courses on the course instructor and the students. The website was accessed 27719 times by all 50 registered users during Spring 2000, meaning the students visited 243 times and the instructor visited 26 times per day. The most popular area is course documents and the least popular is student area. Study findings have implications for distance learning in social work.*

User trends are calculated based on the frequency of use. The study offers a scientific understanding of patterns of a course web site traffic, how and when the instructor and the students utilized the web components. The study goes beyond number of hits (visits), by presenting various means of tracking both the instructor and the student activity levels. The study is significant to social work educators and administrators of web courses

This explorative study has following objectives: a) to measure the frequency of use of a research methods course web site, b) to understand popular days, hours of the day and content areas, and d) to understand activity levels of both the course instructor and the students. These objectives help to evaluate whether or not a course website presence has met the objective of serving students 24 hours a day, 7 days a week. The study offers a perspective on the demands placed by web-enhanced courses on the course instructor and the students. Study findings have implications for distance learning in social work.

For the purpose of this article, user trends of only the instructor and the students are taken into account. User trends are defined as a frequency of visits or hits. Except one class session, all the class sessions during Spring 2000 met face-to-face in classrooms. The students and the instructor also accessed the course website in-between the class sessions or sometimes during face-to-face class sessions. Full-time students met at a high-tech computerized classroom on Fridays for the entire semester. On the other hand, the part-time students met in a computerized high-tech classroom only less than 50% of class sessions on Saturdays and two students shared some of the computers. Moreover, the traditional classrooms in which part-time students met for more than 50% of the class session did not have Internet access for the instructor's workstation.

This article presents literature review of relevant social work literature, methodology of the current study, and descriptive findings. The article concludes with study limitations, recommendations for social work programs, and suggestions for future research.

## **Literature Review**

A long and rich log of evaluations links student characteristics to their satisfaction and perception of course websites (For e.g., Schoech, 2000; Faux & Black-Hughes, 2000). These studies have confirmed that the class websites promote education 24 hours, 7 days a week. Instructors have to spend enormous amount of time to maintain courses online as additional demands are placed on the instructors to develop skills of teaching in multiple learning environments (Knowles, 2000; Schifter, 2000; Stocks & Freddolino, 1998). Consequently, students spend enormous amount of time outside the classroom to continue their learning outside the classroom. Forty percent of social work students reported heavy workload in a web related course (Knowles, 2000). Evaluation of website activities is essential as use of course related websites and Internet

resources could lead to meaningful learning (Bainbridge, 1995; Sunal, Smith, & Sunal, 1998). However, social work literature quantifying activity levels including frequency and duration of use of websites is sparse (Gonzalez & Huff, 1998).

In a rare study of website usage in social work, Gonzalez and Huff (1998) presented a case study of a website by measuring requests, visits and visitors. Requests are the visits to each web page, graphic, or an object. Visitors are the users of the website. Visits are comparable to the hits measured in the current study. In a four month period, History Station website was visited 5046 times, meaning 10.5 times a day. Majority of the visitors came from NASW and CSWE websites. It is important to note that History Station website is a public domain with no password protection. Several factors such as accessibility, necessity and simplicity enhance the use of web sites and Internet resources (Gifford, 1998; Gonzalez & Huff, 1998). The present study offers interpretation of some of the factors that influenced the use of a course website.

Huff and Johnson (1998) studied frequency of email communications. They quantified email transmissions from the students enrolled in distance education courses. Thirty students attended class at a studio on campus, while 46 were distant students attending classes at other sites. Of the total 369 email transmissions, only 15.7% (n=58) came from campus students. The highest number of transmissions received from a single student was 37. The most common message topic was grades and outside resources or information.

Prior research studies have presented evidence that the student characteristics, such as student status have been related to use of email or course websites (Huff & Johnson, 1998; Schoech, 2000). Huff and Johnson found the difference between campus and distant students with the frequency of email messages sent to their instructors. Only 10 students from a distance education class sent the majority (71.5%) of the email transmissions and more than half of the on-campus students never sent an email. Schoech (2000) found a difference between part-time and full-time students and their use of the Internet course. Apart from these studies, some social work literature has described how websites and Internet resources are used in learning (Santhiveeran, 1998; Finn & Smith, 1997; Galambos & Neal, 1998). The present study adopted an innovative evaluation approach to quantify the website activity levels, as a distinct measure to understand the demands placed by web enhanced courses on both the instructor and the students in an objective manner. In addition, the study attempts to understand popular days, times and content areas.

## **The Current Study**

This article is an evaluation of a course website developed for MSW students. The aim of this study is two fold: first, the study intends to determine whether the website is used 24/7 and second, the study aims to compare activity levels of a course website both by the course instructor and the students. The aspects discussed in this investigation are primarily explorative in nature. Since secondary data was derived from the course website, personal characteristics of the students were not available to associate with the activity levels of the website. The course website, discussed in this article, was only a supplement to two sections of a face-to-face traditional research methods course.

The study utilized summative evaluation approach to understand user activity levels. The class web site was password protected. Only 49 students and the course instructor had access to the course web site in Spring 2000. The university server administrator accessed the website whenever assistance was sought. Several components of the course website was secure and offered only limited access to the guests. The guest visits are not taken into consideration. Since research methods course was the only course, which had web enhancements in a MSW program at southwestern part of the USA, activity levels for all 50 users including the students and the course instructor are collected. Therefore, the study utilized purposive sampling procedure.

The common activities executed by both the instructor and the students include accessing course content, reading messages, posting messages, and responding to postings. In addition, the instructor visited the class website to carry out several administrative tasks including designing the site, developing materials, uploading course materials online, maintaining, housekeeping, posting announcements and directions, and communicating with students. The website did not record the remote activities of the instructor such as development of course materials remotely by using word, html, or MS PowerPoint. The instructor also received some help from the university server administrators for designing the website, uploading course materials, and trouble shooting. Actual use does include use of materials in external web resources. Frequency of visits is quantified by individual user visits to web components or areas, visits by the hour of the day, and visits by the day of the week. For the purpose of user activity analysis, the web components are divided into three areas including content areas, communication areas and student tools.

- Content areas include course documents including lecture outlines, assignment pages, syllabus, weekly objectives and announcements.
- Communication areas include asynchronous and synchronous communication activities involving online group forums, chat rooms, and discussion forums.
- Student tools areas include digital drop box, online grade check, student home pages and calendar.

The course website was designed by utilizing Course Info software (Blackboard Inc., 2000). The software offered "Course Statistics" option to retrieve the log files with user activity levels. Consequently, the study did not utilize any specific study instrument to collect data. User trend analysis data was gathered only once for all 50 users at the end of Spring 2000. User activity levels for February 1, 2000 to May 26, 2000 were collected.

## Results

Descriptive procedures are utilized to quantify frequency of visits. These descriptive findings include total number of accesses by area and individual users. Individual visits are further presented in detail by hour of the day and by the day of the week.

***Total Number of Accesses by Area.*** Table 1 presents total number of accesses by area or web components. The instructor spent half of the online time (visits) on curriculum and information management including uploading course documents, assignments and syllabus and the other half was spent for online communication with students. Besides administration of the course website, the instructor visits to the website also include her use of these areas. For example, the instructor sometimes visits or retrieves assignment pages during class sessions to discuss assignment guidelines with students.

Both the students and the instructor accessed the content areas much more frequently than other areas. More than half of the accesses were recorded for accessing content areas, followed by communication areas and student areas. The instructor has accessed communication and group areas (42.1%) much more than students (31.3%). The instructor accessed the student areas and digital drop box the least accounting for only 44 visits. The instructor accessed the student areas for accessing digital drop box and posting grades. Since students utilized digital drop boxes less frequently, the instructor utilized these areas minimally. Based on overall observation, the author found that only two students created their own website and a few students submitted their assignments through their digital drop box. The author noticed that the students were thrilled to access their grades online. Therefore, it was easy to interpret that the students accessed student areas (13.5%) mostly to check their grades.

**Table 1: Total number of Accesses per Area**

Area Name	Instructor		Students	
	Hits	Percent	Hits	Percent
Content Areas	1521	50.8%	13030	52.6%
Communication & Group Areas	1262	42.1%	7765	31.3%
Student Areas and Digital Drop Box	44	1.47%	3355	13.5%
Total	2989	100%	24730	100%

*User Accesses by Hour of the Day.* Table 2 presents student accesses by hour of the day. User activity analysis is presented by hour of the day. Except 4am, the students accessed the website 23 hours a day. The popular hours for the students are 9am followed by 1 pm and the popular evening hours are 8pm followed by 9pm. Except 2am to 5am, the instructor accessed the class website 20 hours a day. The instructor primarily accessed the website at 9am and 3 pm during the working hours. The popular evening access was 9 pm for both the instructor and the students. The popular hours are almost same for both the instructor and the students. However, more than one fourth of the visits occurred during evening hours. The pattern of use is almost same for both the instructor and the students.

**Table 2: User Accesses by Hour of the Day**

Hour of the Day	Instructor		Students	
	Hits	Percent	Hits	Percent
0	10	0.33%	240	0.97 %
1	4	0.13%	77	0.31 %
2	-	-	14	0.05 %
3	-	-	55	0.22 %
4	-	-	-	-
5	-	-	50	0.20 %
6	34	1.13%	155	0.62 %
7	29	0.97%	322	1.30 %
8	77	2.57%	618	2.49 %
9	463	15.4%	3163	12.7 %
10	341	11.4%	1699	6.87 %
11	127	4.24%	2260	9.13 %
12	163	5.45%	648	2.62 %
13	277	9.26%	2416	9.76 %
14	324	10.8%	2152	8.70 %
15	383	12.8%	1313	5.30 %
16	256	8.56%	1040	4.20 %
17	72	2.40%	1053	4.25 %
18	64	2.14%	1283	5.18 %
19	27	0.90%	1320	5.33 %
20	23	0.76%	1485	6.00 %
21	164	5.48%	1689	6.82 %
22	89	2.07%	1094	4.42 %
23	62	2.07%	584	2.36 %
Total	2989	100%	24730	100 %

**User Accesses by Day of the Week.** Table 3 provides student visits by day of the week. The instructor accessed online classroom 7 days a week to keep up with the demands of the web-enhanced courses. Similarly, the students also accessed the course website 7 days a week. Since the course materials were made available every week on Thursdays, the course website was accessed heavily by the instructor on Thursdays for uploading materials and offering performance feedback for student enquiries. More than two fifth of the hits were on the days students had face-to-face classes. The highest access was on Friday, on the day the full-time students met. And the other two fifths is on the Thursdays, when the instructor had promised to upload the course materials and to offer performance feedback for student postings in the asynchronized online forums. The students accessed more on weekends (29.12%) than the instructor (14%). Students primarily accessed the website on the days (Fridays and Saturdays) they had face-to-face classes on-campus. In addition to the days they met in person, the students accessed the class website on Thursdays and Wednesdays. Therefore, the popular days are Fridays and Saturdays for the students.

**Table 3: User Accesses by Day of the Week**

Day of the Week	Instructor		Students	
	Hits	Percent	Hits	Percent
Sunday	63	2.10%	1392	5.62 %
Monday	251	8.39%	1359	5.49 %
Tuesday	169	5.65%	1529	6.18 %
Wednesday	373	12.4%	2242	9.06 %
Thursday	780	26.0%	3287	13.2 %
Friday	997	33.3%	9088	36.7 %
Saturday	356	11.9%	5833	23.5 %
Total	2989	100%	24730	100 %

**Total Accesses by the students.** The course website logged the individual student visits (Table 4). To ensure anonymity of students, random numbers identify students. On an average, a student visited the course website for 504 (sd=253) times in Spring 2000. A minimum number of visits being 30 followed by 153 visits and the highest number was 1264 visits and the second highest was 950 by individual students. A large standard deviation and a presence of outliers show a great variation among the students in their activity levels. Only one fourth of the students visited the course website for more than 632 times.

**Table 4: Total Accesses by the Students**

Student users	Hits	Percent
6	30	0.12 %
43	153	0.61 %
32	164	0.66 %
19	165	0.66 %
21	192	0.77 %
47	219	0.88 %
17	233	0.94 %
45	290	1.17 %
13	291	1.17 %

29	291	1.17 %
38	293	1.18 %
18	294	1.18 %
34	295	1.19 %
26	357	1.44 %
14	369	1.49 %
40	386	1.56 %
27	395	1.59 %
30	408	1.64 %
22	429	1.73 %
5	430	1.73 %
41	431	1.74 %
12	437	1.76 %
42	446	1.80 %
7	450	1.81 %
33	454	1.83 %
39	458	1.85 %
24	461	1.86 %
20	492	1.98 %
31	517	2.09 %
9	522	2.11 %
37	535	2.16 %
11	544	2.19 %
28	554	2.24 %
46	571	2.30 %
23	594	2.40 %
15	611	2.47 %
25	632	2.55 %
10	641	2.59 %
35	642	2.59 %
49	744	3.00 %
16	809	3.27 %
8	835	3.37 %
4	842	3.40 %
1	877	3.54 %
44	892	3.60 %
3	905	3.65 %
48	936	3.78 %
2	950	3.84 %
36	1264	5.11 %
Total	24730	100 %

## Discussion

With few exceptions, both the instructor and the students had similar access pattern. In other words, the instructor's usage is associated with the student usage and vice versa. In order to offer performance-based feedback, the instructor had to utilize the communication tools much more than students. Therefore, one could conclude that student activity levels increase not only the administrative tasks but also the instructor's use of the course website.

Although class websites augment quality instruction (Schoech, 2000), it is heavily time consuming for both the instructor and the students. Similar to prior research (Knowles, 2000;

Schifter, 2000; Stocks & Freddolino, 1998), the present study found that maintaining the course website with course documents and online interactions take heavy toll on instructor time for accessing the site to accomplish the required tasks. Therefore, careful planning to minimize web components and interactions is necessary to optimize faculty workload.

User activity levels are much more distributed among the students in the present study when compared to a prior research on email transmissions (Huff & Johnson, 1998). Accessibility to computers is one of the important contributing factors for computer use (Schoech, 2000). Difference in access levels of students before, during, and after the face-to-face class meeting time had contributed in part to the difference in the access levels on Fridays and Saturdays. Therefore, ready access of computers for the instructor and the students on Fridays might have contributed partly for the highest usage.

Huff and Johnson (1998) found that the students primarily contacted the instructor about their grades. Similarly, the current study found that more than one tenth of the students' activities were to access grades, which was a major feature in student tools. Although the course website is password protected, the course website traffic is several times more than a public domain (Gonzalez & Huff, 1998). Since the users are defined and oriented properly, the user visits are phenomenal. Several factors including orientations, training, type of material, web activities, faculty release time, and student characteristics and enthusiasm might have contributed for the highest visits logged in the course server. It is also important to note that more than half of the users are part-time students with multiple responsibilities and attended classes primarily on weekends or evenings. The part-time students actively sought assistance via online forums. The server administrator also noted that the research methods course website, discussed in this article, had the highest visits during Spring 2000.

For the first time, user trend analysis helped the instructor to understand activity levels associated with administering web-enhanced courses. The study has implications in determining release time and workload as the study offers a unique perspective about instructor's load in administering and managing the site. The study findings have implications to social work departments that are considering of supplementing their courses with web components. The study has implications to distance learning and distance education programs. At large, the study findings are expected to enhance informed decisions on how and when to deliver web based course materials to meet the needs of virtual learners. The findings are generalizable to the students and the instructor of the current study. The findings had a major effect on the author in making informed decisions in making web enhancements in the following semesters. The instructor has minimized web components and online interactions in other courses in order to minimize the workload.

### **Limitations and Recommendations**

The study findings are limited to the visits or hits to the course website. However, duration spent by the instructor and the students is unknown. The instructor did not have any means to measure how many days the instructor had no hits or visits. As a pilot project, the instructor was offered release from two courses to implement several web components for one sections of a research methods course. Since the instructor was scheduled to teach two sections of a research methods course, she introduced all web components to both the sections. Consequently, the instructor's burden and online activity levels have increased considerably. By taking into consideration all these factors, the instructor's use is not transferable to other courses. Unlike prior research (Faux & Black-Hughes, 2000; Knowles, 2000), none of the online activities is graded therefore, the students used the website voluntarily. Therefore, the students' use could not be generalized to the courses in which students received part of the course grade for utilizing web components. Prior research found a difference between full and part time students and their use of web components

(Schoech, 2000). Since two sections of MSW students, full-time and part-time students are combined the differences between full-time and part-time students is unknown. The access levels are much more than usual, as web enhancements are introduced as a pilot project. The instructor did not have means to track how many days in a term the course website did not have any hits.

Several of the students submitted portions of their assignments at online forums to get feedback on an ongoing basis; the instructor accessed the site several times for reading online messages and offering performance feedback. Therefore, the author suggests two measures: First, instructors need to set limits on the number, length, time, and types of online postings in higher education; and second, the instructors need to minimize web components and online interactions.

## Conclusion

Findings are presented for both the students and the course instructor. The website was accessed 27719 times by all 50 registered users of the website during Spring 2000, meaning the course website was visited 243 times per day. On an average, the students accessed the course website approximately 217 times per day, meaning each student has visited the website approximately 4.5 times per day. The instructor visited the course website for 26 times per day. Consequently, the instructor's visit is more than five student visits per day. The most popular web component (area) is content area with course documents and the least popular area is student area. The students accessed the course website 23 hours a day, 7 days a week and the instructor accessed the course website 20 hours a day, 7 days a week. The popular hours are 9am and 9pm for both the instructor and the students. Popular day for both the student and the instructor is Friday.

Besides frequency of visits, duration of the time spent on the course website was also high as the student postings needed thoughtful responses. Therefore, future research needs to focus on duration of time spent by both students and instructors in a course websites. Future research comparing part-time and full time students is essential as literature shows that returning students tend to use the class website extensively than traditional students due to their need to cope up with multiple responsibilities (Schoech, 2000).

Although limited time and resources are a key faculty and program issues, the author appreciates the release time to develop the online modules. Since the instructor has six years of developing and deploying online modules, learning to use course design software and maintaining the website was simple. However, several communication activities and the students' expectations were challenging. In order to be successful, the instructor was cognizant of learning needs of adult learner and intrinsically motivated to experiment with web-based learning (Schifter, 2000).

## References

Bainbridge, W. S. (1995). Sociology on the World Wide Web. *Social Science Computer Review*, 13, 508-523.

Blackboard Inc (2001). Welcome to Blackboard [online]. Available: <http://www.blackboard.com> [July 28, 2001].

Faux, T.L. & Black-Hughes, C. (2000). A comparison of using the internet versus lectures to teach social work history. *Research on Social Work Practice*, 10,4:454-466.

Finn, J., & Smith, M. (1997). The use of the World Wide Web by undergraduate social work education programs. *The Journal of Baccalaureate Social Work*, 3(1), 71-84.

Galambos, C. & Neal, C. (1998). Untangling the net: Using policy resources in the classroom. *Conference program and proceedings: Information Technologies for Social Work Education and Practice*, (pp. 143-151). Columbus: University of South Carolina College of Social Work.

Gifford, E. D. (1998). Social Work on the Internet: An introduction. *Social Work*, 43(3), 243-251.

Gonzalez, J. E., & Huff, D. (1998). Assessing the impact of instructional technology: The case of the Cyber-History of Social Work. *Conference program and proceedings: Information Technologies for Social Work Education and Practice*, (pp. 179-184). Columbus: University of South Carolina College of social work.

Huff, M. T., & Johnson, M. M. (1998). Students' use of E-mail and a Listserv in Distance Education Courses. *Conference program and proceedings: Information Technologies for Social Work Education and Practice*, (pp. 203-211). Columbus: University of South Carolina College of Social Work.

Knowles, A. (2000). Implementing web-based learning: Evaluation results from a mental health course. *Conference program and proceedings: Information Technologies for Social Work Education and Practice*, (CD ROM). Columbus: University of South Carolina College of Social Work.

Santhiveeran, J. (1998). Social Work Online (SOLE): A dynamic website in social work. *Conference program and proceedings: Information Technologies for Social Work Education and Practice*, (pp. 288-293). Columbus: University of South Carolina College of Social Work.

Schifter, C. C. (2000) Faculty participation in asynchronous learning networks: A case study of motivating and inhibiting factors. *Journal of Asynchronous Learning Networks* (4) (1), 15-22.

Schoech, D. (2000). Teaching over the internet: results of one doctoral course. *Research on Social Work Practice*, 10,4:467-486.

Stocks, J.T. & Freddolino, P.P. (2000). Enhancing computer-mediated teaching through interactivity: the second iteration of a world wide web-based graduate social work course. *Research on Social Work Practice*, 10,4:505-518.

Sunal, C. S., Smith, C., & Sunal, D. W. (1998). Using the Internet to create meaningful instruction. *The Social Studies*, 89, 13-17.