Summary of Student Access to the WWW Data in a large enrollment class, Fall Quarter 1998

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I thought I'd share with you some student access to computers and the Internet data I accumulated in December, 1998. I think access is a more difficult and complex issue than simply discussing "seats," although I grant that it is a necessary place to start, and that to address access, we need data like these to begin to understand just what undergraduate students experience when they are required to use the WWW for course assignments. I hope you'll find the data useful.

The course from which these data were obtained was an upper division anthropology class with no prerequisite (specifically Anthropology 137, The Ancient Maya). The course fulfills General Education requirements in Non-Western Culture and Social Sciences. The course also fulfills requirements for the major in anthropology.

A total of 206 students were enrolled in the class; their class standing and majors are:

Standing	**n**	**%**	**Major**	**n**	**%**
Freshman	11	5.4	Social Sci.	102	49.8
Sophomore	38	18.5	Sciences	41	20.0
Junior	96	46.8	Humanities	28	13.6
Senior	56	27.3	Undecided	34	16.6
Other	4	2.0			

Each student in the class was required to write a review of a web site about Maya archaeology, ethnography, or culture. The students were assigned this project early in the quarter, and had 9 weeks (including the week of final exams) to complete it. I gave students an overview of the campus resources for web access, and told them that I would help them gain access to it if they needed assistance. I did not schedule any lab or tutorials. Although students asked me about the appropriateness of their web site choices, no one asked for assistance in gaining access to the web.

On the final exam in the class, I asked the following question for extra credit: **"Briefly describe where and how you got access to the WWW for the web assignment. Was it on campus, off, how easy or difficult was it? Do you use a private ISP, UCSB email? Thanks!"** I received a total of 200 valid responses. Almost every student wrote a long paragraph in response, and some even wrote as much as two pages!

From these responses, I have been able to cull some useful information about how students got access to computers and the web, and some sense of what their experience was like. Although I could have designed a much more comprehensive set of questions, I'm fairly impressed by the quality and thoughtfulness of most of the responses.

I have summarized the data into the following categories: where was access, where did you get access to the web on campus, ownership or access to computers, and for off-campus users, what ISP was used.

Where: A majority of students obtained access to the web off-campus; relatively few used both UCSB and off-campus resources.

Where	Total
Off campus	51.50%
On campus	41.50%
Both	7.00%
Grand Total	100.00%

On-campus use: Of those who did use the campus, most used Davidson Library, followed by IC and other open access labs. A very small number of students tried to use UCSB equipment and failed.

UCSB	Total
Davidson Library	23.00%
Arts Library	1.00%
UCEN Netstations	4.00%
No clear response or off campus use	49.50%
work at UCSB	1.00%
Lifesciences	1.50%
Instructional Computing	10.00%
Tried UCSB but failed	2.50%
Dormitories	5.00%
Department labs	1.50%
HSSC	1.00%
Grand Total	100.00%

Ownership and access: This proved to be an interesting question. Almost 17% of the students enrolled in the class do not own a computer of any kind. This is a hard number, since I only counted it if the student explicitly stated it. I think this may be a slight underestimate of those without computers. A fairly large number of students said nothing directly about ownership, but whether this answer reflects no computer or no web access at home is difficult to determine. The tone of some of the comments, however, leads me to estimate that another 5% or so of the non-respondents do not have personal computers. This is indirectly supported by the fairly large number of students who used a friend's computer. While it seems fairly clear here that this quantity is monitoring access to the

web and not ownership per se, again, some of these students are unlikely to own their own computers. My best guess, given the vagueness of the question, is that roughly 20-25% of the students in this class do not own computers. Note that a minimum of 40% have their own computers.

Access	Total
Do not own	16.50%
Own computer	39.50%
Used friend's	15.50%
No response	27.00%
At work	1.00%
Public library	0.50%
Grand Total	100.00%

Off campus access: Many students did not know what the term ISP meant, and consequently, many did not respond to this question. I suspect that many of these non-respondents use WWW mailers, like Hotmail. AOL clearly dominates here.

ISP	Total
AOL	18.50%
None mentioned	67.00%
MSN	4.50%
Earthlink	2.00%
GTE	2.00%
Silicon Beach	2.50%
Prodigy	0.50%
Concentric	0.50%
Westnet	2.00%
101Freeway	0.50%
Grand Total	100.00%

Ease of assignment: Most students found the assignment relatively easy to complete. Note there is no strong relationship between where the assignment was completed and difficulty. However, these results should be interpreted with caution. Off-campus users had relatively easy access to their own computers or those of friends. On campus users found the assignment easy to complete if they made an effort to avoid the crowds in the library or IC by astute planning. Those who found the assignment difficult to complete were unanimous--there are too few adequate web connections on campus in open facilities. Printing was another problem for many students. On campus users had to go to IC or some other location that had printers. Many open access areas, like the UCEN or the library do not. Some students searched on campus, and then finished the assignment at home or at a friend's place where they could print. Most commented that the speed of

campus connections was a plus, but that time limits on usage as well as limited printing facilities were a real drawback to campus-based research.

Ease	Total
Hard	22.00%
Easy	77.00%
OK	1.00%
Grand Total	100.00%

	Where			
Level	Off	On	Both	Grand Total
Hard	15	25	4	44
Easy	87	57	10	154
OK	1	1		2
(blank)				
Grand Total	103	83	14	200

Observations: These data can be read in many ways. It suggests that in the experience of this class, access to the web on campus was adequate, but that it also had drawbacks. Planning one's day and time of access could help assure access. Printing was problematic for most on campus users. Off campus users were pleased with having the ability to spend more time on the assignment if they owned a computer or had a friend who owned one. Sharing seems more common than expected. A relatively large proportion of this class does not own a computer.

These data also suggest that if web assignments increase in frequency and intensity, open access on campus is unlikely to be able to meet the demand. How students will resolve this problem is not clear from the data. It seems at least 17% or so of students do not own computers and may not plan on purchasing them. Sharing may prove to be more difficult as greater demands are placed on individual students. Open access on campus can be improved, certainly, but may not be sufficient to meet demand, especially for printing.

Although not directly discussed, it is also clear that as instructors begin to integrate web page construction, as well as use, into their courses, open access will become even more problematic. Students will simply have to spend more time on the web, and this will mean that open access facilities will be scheduled more completely than ever. Printing will become more difficult as well.

These data also suggest that improving off campus access is a potentially important way to facilitate student computing. This implies a number of mechanisms, ranging from creating open access satellites in Isla Vista (not likely to be cost-effective in the long run) to facilitating remote access to either UCSB modem pools and servers to encouraging students to subscribe to an ISP. Either of the latter recommendations would involve the setting of

standards for purchases of both hardware and software and some consideration of support services that would get students into computing when they arrive as freshmen (or whenever they transfer in). Other UC campuses, notably Berkeley and UCLA, have developed sets of standards for software, hardware, and connecting to the Internet (see for example the Connecting@Berkeley Fall 1998 CD). Significantly, both of these campuses have well-organized and well-funded offices of academic and administrative computing.

We need also to think carefully about how we can assist students in the purchase of computers, not only for web use but for basic educational activities. This survey shows a minimum of 17% of the students enrolled in this class did not own a computer and were thus wholly dependent upon open access labs and the charity of friends. In this instance, access might be defined as developing creating financing plans, as well as recommendations, for student computer and software purchases.

Recommendations: We need to commission more surveys of this kind in a diversity of classes. This is perhaps the most direct way that we can get a sense of how students use computing resources on this campus, and how, in concert with other data sources, we can begin to design a strategy to improve student access to computing.

In practical terms, this will mean some discussion about sampling (what sorts of classes), survey design (what kinds of questions), and survey distribution and analysis. Although I have not thought this through entirely, it seems that if the compilation of survey data is deemed valuable, we might begin by naming a subcommittee to look into these questions. This process will require some resources for printing and analysis, but I am confident that these costs will be relatively low.

These results also imply that we should become more actively involved in making recommendations about computing to students very early in their careers here at UCSB. While all students would benefit from the setting of standards like some of those recommended above, we should make our business to inform our new, incoming students about our recommendations for computing early and often before they enroll. We should find out who cannot afford computers or Internet access, and we should create mechanisms to help them. Surely this will, in the long run, be cheaper than providing more permanent open access seats. Such a strategy might also lead to the routing of scarce computing funds to the kinds of open access labs we will need more of in the future--those that allow students to create web sites and other online course activities.