The Potential for Computer Communications Among ICPSR Representatives

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Introduction

Availability of computer-based communication, especially electronic mail and computer conferencing, has become commonplace on most North American campuses. Through such technology, staff at many universities can now communicate with their colleagues at other institutions as easily as they do with those on their own campus. The promise of computer communications lay in facilitating scholarly and professional exchanges which are immediate, easy, inexpensive and widespread.

However, even though this technology has become extensively accessible, obstacles do exist which impede its application. A recent study[1] revealed that among the important factors determining the usage of computer conferences was the prominence of a terminal[2] within a person's immediate work environment. The most active members of the conference of study were those who regularly used a terminal during their daily routine and whose equipment permitted the use of packet-switching networks.

On the basis of these findings and with the advent of the Consortium Data Network (CDNet), a survey was conducted of the participants attending the 1985 biennial meeting of the Official Representatives (OR's) to the Inter-university Consortium for Political and Social Research (ICPSR).

A survey of official representatives

Immediately prior to the ICPSR business meeting, a questionnaire was distributed which focused on two topics.[3] The first of these dealt with the availability and use of terminals in the

[1] Charles Humphrey and Wendy Watkins, "DataLink: A Computer Conference for Canadian Data Libraries and Archives," Report to the Social Sciences and Humanities Research Council of Canada, p. 24ff.

[2] *Terminal* is used here to refer to the same range of I/O devices that the term *workstation* has come to denote, which covers everything from teletypes to visual display units to microcomputers. However, since items in the questionnaire referred to *terminals*, we will continue to use this term below.

[3] Ninety-one questionnaires were collected from the 125 representatives at the meeting, providing a 73% response rate. Two factors, however, must be considered when generalizing from this poll. First, 30% of the participants were substitutes for Official Representatives. Thus, generalized comments from this sample encompass more than just OR's. Secondly, only 46% of the ICPSR membership were in attendance.

OR's workplace; while the second sought some indication of the scope of experience that representatives have had with computer communications. This paper reviews specific characteristics of the ORs and examines how prepared this group is to avoid or overcome the impediments to active computer-based communications.

The availability and use of computer terminals

Lack of convenient access to a terminal does not appear to be a major problem for the vast majority of ICPSR representatives. Nearly 80% of the respondents have immediate access to a terminal at work (see Table 1), and 48% have terminals both at home and work. Only 14% do not have any convenient access, and of these thirteen respondents, eleven have a terminal available to them either on the same floor as their office or on another floor in the same building.

Having a terminal at your fingertips does not necessarily ensure use of the device. However, as shown in Table 2, a clear relationship between access and use does exist in this data. Those with a terminal immediately available to them during the workday report the highest usage rates. Examining the breakdown across the categories of access, the proportion of those using a terminal several times a day declines monotonically as one moves from those with the highest degree of immediate access to those with no terminal directly available.

The obvious conclusion is that most respondents make use of the equipment that they have. However, this is not necessarily the most significant conclusion. More important is the summation that a computer terminal is an integral tool in the work routine of a large majority of the ICPSR representatives. Over 70% indicated that they make use of a terminal throughout their workday.

Important characteristics for computer communications

A few special features are desirable for the effective use of computer mail or conferencing systems. One feature is the capability of placing a call and making a connection with a central computer system and its mail or conferencing software. This type of terminal connection usually is supported by a modem attached to a standard telephone outlet. Such a configuration permits a user to call either their local computer system or a packet-switching network through which a myriad of computer systems are available. Some terminals, however, are directly wired to a central computer. In such instances, the use of packet-switching networks is dependent upon a call-out facility on the mainframe. Regardless of whether the terminal connection is through a modem or a mainframe call-out facility, the most flexible situation for the user is to be able to logon to the computer system housing the mail or conferencing software.

Of the survey respondents, 44% have a terminal with dial-out capabilities at work (see Table 3). When those who have a terminal at home only are included in the group with dial-out capability, the overall percentage increases to 54%. Furthermore, a call-out facility was present on the central computer systems of over 70% of the respondents. These figures reveal that a majority of the respondents have available some form of call-out facility which would permit them to connect to the Consortium network.

Another characteristic which encourages the use of computer communications is the availability

of a full-screen editor. The backbone of computer communications is the typed word, and the ease with which text can be entered and modified significantly influences the amount of text contributed. Just as was the case with dial-out facilities, respondents seem to have ready access to full-screen editors whether at home or work (see Table 4). Eighty-eight percent of those with terminals at work have such an editor; 82% with terminals at home also have one available.

Experiences with computer communications

Two-thirds of the respondents reported that they had made use of at least one of the three communication methods — electronic mail, computer conferencing and networks (see Table 5). Nearly half (47%) had experience with more than one of these methods. In fact, those saying that they had used both networks and electronic mail constituted the largest single group (27%).[4] Considering the three electronic media separately, 58% of the respondents noted some experience with electronic mail; 57% had used a network; only 20% had tried a computer conference. In terms of overall exposure, one in five indicated experience with all three methods.

Experience with these communication methods clearly varied by type of terminal access. Eighty-one percent of those who have a terminal both at work and home have had experience with at least one of the three methods (see Table 6). Antithetically, 70% of those without immediate access to a terminal indicated that they had no experience with any of the three communication methods. The difference between these two groups accentuates the gap that exists between those who have a terminal at their fingertips and those who do not.

In comparing the remaining two groups, the percentage of those having worked with at least one of the communication methods was virtually the same, 68% for those with a terminal at work only and 67% for those with a terminal at home only. The experience levels of these two groups are much closer to the group with terminals at both work and home. One interesting difference is that a higher proportion of those with only a terminal at home had tried two or more of the communication methods.

An indication of the extent to which these three types of communication have been incorporated into the work routines of the respondents is shown in Table 7. Nearly one-third of those making use of electronic mail check it on a daily basis and over 60% access it twice a week or more. Similarly, 22% of those belonging to a computer conference use that medium daily, while only 10% of network users use the network that frequently. Electronic mail is clearly leading the way among these three methods of communication; and with the introduction of electronic mail service between universities, daily use of electronic mail will undoubtedly increase. Its popularity is exemplified by the fact that 63% of those who use electronic mail daily also reported using BitNet, which is an inter-university electronic mail service.

[4] Respondents may have been confused about the difference between a carrier network such as Telenet and an application network such as BitNet. The former is a service which allows one to dial a local telephone number and to connect as a remote terminal to a computer system, while the latter type of network refers to special application software making use of packet-switching technology to transmit information between sites. The item in the questionnaire was suppose to identify those who had experience with a carrier network.

Conclusion

Given both the availability of terminals to ICPSR representatives and their experiences with computer communications, what are the implications for the Consortium Data Network (CDNet)? The profiles described above point to a couple of possibilities. First, slightly more than half the respondents possess the proper mix of both equipment and experience, thus making the likelihood that they will use CDNet very high. Fifty-two percent of the respondents reported immediate access to a terminal and indicated experience using a network. This is a significant group, since access to CDNet depends upon a remote terminal connection through a packet-switching network such as Telenet. Secondly, an additional 12% have both a terminal available and some experience with electronic mail or computer conferencing. Assuming that some experience with either of these media develops skills that are easily transferable to the use of networks, this group should also readily use CDNet. Thus, 64% of the respondents appear to possess essential equipment and skills to use CDNet without major obstacles.

An additional 21% of the respondents have ready access to terminals but no experience with the three methods of computer communication. Consequently, this group faces the task of learning some new computing skills. An important factor in this regard will be motivation. Motivating people to use any of the three communication media, even when they already possess the necessary skills, is in itself a challenge. Thus, initiating a service such as CDNet is further complicated by the need to motivate first time users to acquire the additional skills. No data was collected in this survey to indicate directly how significant a factor motivation will be.

Factors other than the computing skills and motivation levels of OR's will also influence the future use of CDNet. Certain environmental factors, such as past demands for ICPSR services and the vitality of the member university's research community, will contribute to usage patterns. These factors have not been examined here. Rather, attention has been focused on a few known obstacles to the use of computer communications. As CDNet swings into production, the importance of these and other factors should become evident.

[Editor's note: The following is reprinted from ICPSR's *Guide to resources and services 1985-1986*, p24.
"Testing of a new remote service, Consortium Data Network (CDNet), is currently underway and should be available in the fall. This new service is aimed initially at ICPSR Official Representatives. CDNet will provide access to an on-line searchable version of the holdings section of the Guide, an on-line data and codebook ordering facility, an interactive message and conferencing facility as well as access to statistical software for analysis of ICPSR holdings. A data base containing information about each item in a large subset of the studies available through the ICPSR is also being produced for inclusion in CDNet. Connection to CDNet will be available through the Autonet, Telenet and Tymnet public data networks."] ■

Table 1

Access to a Computing Terminal[1]

Terminal at Home	Terminal at Work				Home Total	
	Have Access		Don't Have			
	n	%	n	%	n	%
Have Access	43	48%	9	10%	52	58%
Don't Have	25	28	13	14	38	42
Work Total	68	76%	22	24%	90[2]	100%

[1] Percentages are based on the total number of respondents in the overall table.
[2] One questionnaire was excluded from analysis since information was provided for only one of the items.

Table 2

Frequency of Terminal Use by Location & Access to Terminal

Frequency of Use[1]	Location of Immediate Terminal Access									
	Access at Work and Home		Access at Work Only		Access at Home Only		No Immediate Access		Totals	
	n	%	n	%	n	%	n	%	n	%
[1]	36	84%	18	78%	6	67%	1	8%	61	71%
[2]	3	6	2	9	3	33	0		8	9
[3]	2	5	3	13	0		4	34	9	10
[4]	0		0		0		2	16	2	2
[5]	2	5	0		0		4	34	6	7
[6]	0		0		0		1	8	1	1
Total	43	100%	23	100%	9	100%	12	100%	87	100%
N.A.	0		2		0		1		3	

[1] 1=Several Times a Day
2=Once a Day
3=Couple of Times a Week
4=Once a Week
5=Couple of Times a Month
6=Infrequently

Table 3

Type of Access to Dial-out Facilities

Answer	Is Dial-out Available Through ... A Terminal at Work		A Mainframe Computer		Both Terminal at Work & via Mainframe Computer	
	n	%	n	%	n	%
Yes	40	44%	64	71%	29	32%
No	25	28	15	17	29	32
N.A.	25	28	11	12	32	36

Table 4

Availability of a Full Screen Editor

Answer	Does Your Terminal Allow Full Screen Editing? Terminal at Work		Terminal at Home	
	n	%	n	%
Yes	58	88%	41	82%
No	8	12	9	18
N.A.	24		40	

Table 5

Use of Electronic Mail, Computer Conferences, and Networks

Experience with ...	n	%
Only Networks	9	10%
Only E-mail[1]	11	12
Networks & CC[1]	1	1
Networks & E-mail	24	27
Networks, CC & E-mail	17	19
None	28	31
Total	90	100%

[1] E-mail=Electronic Mail CC=Computer Conference

Table 6

Computer Communication Experience by Access to a Terminal

Type of Access[1]	Location of Immediate Terminal Access								Total	
	Access at Work & Home		Access at Work Only		Access at Home Only		No Immediate Access			
	n	%	n	%	n	%	n	%	n	%
[1]	6	14%	1	4%	0		2	15%	9	10%
[2]	7	16	4	16	0		0		11	12
[3]	0		1	4	0		0		1	1
[4]	12	28	6	24	4	45%	2	15	24	27
[5]	10	23	5	20	2	22	0		17	19
[6]	8	19	8	32	3	33	9	70	28	31
Total	43	100%	25	100%	9	100%	13	100%	90	100%

[1] 1=Network Only
2=E-mail Only
3=Network & Computer Conference
4=Network & E-mail
5=Network, E-mail & CC
6=None

Table 7

How Often Computer Communications Are Used

Use Rate	Electronic Mail		Computer Conferences		Networks	
	n	%	n	%	n	%
Daily	16	32%	4	22%	5	10%
Twice Weekly	15	30	2	11	11	23
Once a Week	6	12	3	17	8	16
Twice Monthly	6	12	2	11	7	14
Infrequently	7	14	7	39	18	37
Total	50	100%	18	100%	49	100%