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Computers for Homebound and Isolated Persons (CHIPS)

Independent Evaluation Report

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Preface

A telephone conversation in 1997:

Barbara Monty, Knoxville Office on Aging: Hello?

Nurse at local hospital: I understand that you're upgrading your old computers. I have a patient who is home-ridden, and maybe a computer could connect him to the Internet and the world. Might we have one of your old ones?

Barbara: Sure, let's see what we can do.

A week later:

Barbara: Hello?

Attorney in local practice: We're upgrading about a dozen computers in our firm, and wonder if you might know of someone who could use our older machines.

Barbara: Well, hmm...

A week later.

Barbara: Hello KORRNET?

And CHIPS was born.

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9. Welsh, Teresa, and Gretchen Whitney. "Analysis of Information Needs and Satisfaction of Clients of the KORRNET Computing Laboratory, County Walk, Knoxville Center". 2000. (unpublished ms.)
10. Bain, Sherry. "KORRNET Computing Laboratory - Independent Study Report. 2001". (unpublished ms.)
11. Interview with Staff Member

Introduction

The first purpose of this report is to provide the Technology Opportunities Program (formerly TIAPP) with an evaluation of the Computers for Homebound and Isolated Persons project. This project was administered by KORRNET (Knoxville-Oak Ridge Community Information Network) and a committee of social service organization representatives from July 1999 to July 2002. The project intended to “demonstrate how information technology can deliver important services to those in need.” It did so by providing computers and modems, mentoring services, and an electronic community to individuals who, for various reasons, were unable to leave their homes. The project implements further innovation in that it includes a computer laboratory primarily for seniors, which is placed in a local government “mall” called County Walk. County Walk gathers together satellite offices of the County Clerk, the Sheriff, the Courthouse, the Tax Department, the Post Office, and other similar services. The shopping Mall serves a unique cross-section of rural and urban residents.

The second purpose of this report is to offer replication suggestions to other groups who may wish to replicate the project. CHIPS won a prestigious Stockholm Prize in 2001, which the European audience understands to be equivalent to the Nobel Peace Prize for technological innovation. There were numerous requests for replication advice following this event, which simply could not be answered due to staffing constraints. It is hoped that this document and supporting documents will answer those requests.

CHIPS is a 3-year program funded by TOP that provides computer and telecommunications capabilities to individuals who are disabled or for some reason unable to leave their homes physically, or to caregivers of such individuals. Through electronic discussion lists and other media, the recipients of these technologies have access to the Internet and the Web.

Project Evaluation

The role of evaluation

In this context, evaluation plays several roles: it is a mechanism to measure individual client success and participation, (b) to measure the progress of the client population as a whole, and (c) to assess the overall administration of the program. While these three areas are inter-related, they are also independent. A motivated individual could, for example, achieve a measure of success despite an administration that was less than adequate. Conversely, an individual could achieve less success for individual reasons that simply outweighed the excellence of the administrative procedures and leadership.

Below are the various criteria used for the evaluation process.

Criteria from original proposal

The original proposal included goals and objectives such as:

...to reach homebound members of the community and change lives for the better

...to demonstrate how information technology can deliver important services to those in greatest need.

And,

CHIPS will be a success when the following major goals are met:

1. All 50 new Pentium-class computers are in place and in use by homebound individuals across the region, including assistive technologies as needed. A similar number of donated computers will be obtained for distribution to additional CHIPS users.
2. An effective mentoring and volunteer program is established that results in dozens of self-sufficient, confident, and satisfied end users.
3. Awareness of and participation in CHIPS among local employers becomes widespread, with resulting employment opportunities for homebound and isolated persons.
4. CHIPS end users take advantage of employment opportunities through collaborations with partner organizations. At least two new telecommuting employment opportunities per six months is a realistic goal.
5. The County Walk location is fully equipped and staffed by CHIPS mentors and

volunteers, with heavy traffic from visitors to the Mall.

6. Homebound users have equal access to County Walk on-line government services.
7. A formal and sustainable relationship is established between CHIPS and all vocational rehabilitation programs in the area.
8. Assistive technologies (commercial, shareware, and prototype) are applied aggressively based on specific needs of individual CHIPS end users.
9. A vibrant on-line community of CHIPS users and supporters is created, as a distinct and important component of the larger KORRNET community.

Program and individual evaluation was considered from the beginning to be an ongoing part of the activity. The proposal included an intention for an evaluation program even before the first computer was installed. The Evaluation Questions from the original proposal were:

1. Were the mentors' skills adequate to the tasks?
2. Did CHIPS succeed in helping you use the computer and get on-line?
3. If you required assistive technologies, did CHIPS provide necessary support?
4. Which assistive tools work? Which ones do not?
5. Were you able to access local government services online?
6. If desired, did CHIPS help you identify employment and telecommuting opportunities?
7. In general and specifically, how can CHIPS services be improved?
8. Would you be willing to help others as a CHIPS volunteer?

Various quantitative statistical analyses were included in the proposal which, upon consideration of the data, proved to be more than what was required. Descriptive statistics, however, have been compiled.

Performance reports

The Quarterly Performance Reports indicated the following milestones and their completion dates:

The County Walk location is fully equipped and staffed by CHIPS mentors and volunteers, with heavy traffic from visitors to the mall. (3 / 1999)

A formal and sustainable relationship is established between CHIPS and all vocational rehabilitation programs in the area. (6 / 1999)

An assessment plan will be developed, including SQL data collection for tracking CHIPS client outcomes. (8 / 1999)

The project results will be made available iteratively via the web to other communities interested in implementing similar projects. (10 / 1999)

Homebound users have equal access to County Walk on-line government services. (4 / 2000)

A vibrant on-line community of CHIPS users and supporters is created, as a distinct and important component of the larger KORRNET community. (6 / 2000)

An effective mentoring and volunteer program is established that results in dozens of self-sufficient, confident, and satisfied end users. (10 / 2000)

All 50 new Pentium-class computers are in place and in use by homebound individuals across the region, including assistive technologies as needed. A similar number of donated computers will be obtained for distribution to additional CHIPS users. 10 / 2001)

Assistive technologies (commercial, shareware, and prototype) are applied aggressively based on specific needs of individual CHIPS end users. (10 / 2001)

Methodology

The formal final evaluation program was initiated in the Summer of 2001 and executed through the Spring of 2002. A participant questionnaire (see Appendices 4-6) was designed by the evaluation team, in collaboration with the CHIPS administrative staff. The Evaluation Questions noted above from the proposal were re-worked into the questionnaire. Participants were alerted several times via e-mail that the evaluation process was under way, both by the KORRNET Executive Director and the lead analyst. They were given the opportunity to answer the questions by e-mail, by telephone conversation, or by home visit.

Follow up surveys were, for some individuals, sent three times over the course of several months, and in consultation with the CHIPS staff, decisions were made regarding the nature of follow up measures. The CHIPS staff knew the condition of most of the participants, and their likelihood of response.

The files and other records of the project were reviewed by an analyst. And, interviews with the project staff were conducted on numerous occasions by the team and Principal Investigator.

A critical concern for the conduct of the evaluation was the issue of participant privacy. We wanted participants to feel free to tell us as truthfully as possible their experiences

in the program, so measures were undertaken to protect their identities. The analysts, for example, in collecting their data, created numbers for the participants, and the PI never saw the list that mapped the participant names to the numbers. Great care was taken in preparing this report, because while the outside community would not recognize an individual's story, those inside the community *will*. In this report, no "real" names are given for any participant.

The Evaluation Questions from the original proposal were re-worked and included in the Participant Questionnaire. The Goals from the proposal will be addressed in Findings, below.

Critical factors for success

While we have discussed at length the need for substantial record keeping, excellent organizational relationships that enable donations of equipment, and a clear mission statement that helps to keep the project focused, the critical factors for success remain intangible. These factors are personal. The CHIPs staff genuinely care for the participants in the program. And, the participants genuinely care for the CHIPs staff. This is evident in the tones of voices in meetings with the staff. It is evident in the degree to which the staff knows of and speaks of the participants. Not just a few, but every one of them. Every participant is a person who is known to the staff as an individual in a particular situation with specific needs.

In a meeting with the evaluation team, for example, we reviewed with the staff the names of individuals who had not responded to surveys. Without relying on notes, the staff could tell us the best way to contact each individual, and the particulars of their situation ("She won't talk to men." "He's in and out of the hospital all of the time." "She thinks every phone call is a telemarketer and hangs up quickly - state your business immediately.").

Evidence of Activities¹

Description of the CHIPS community - the individuals

Over the three-year period of the grant, approximately 400 individuals applied for participation in the CHIPS program (there were 200 applications by the end of the first year). At the end of the grant period, there were 82 active persons. A chart of their status is provided in Appendix 1. The relatively high death rate (8) can be attributed to the fact that this is a high-risk population to begin with.

They are in ten of the 16 service area counties, with the highest concentration (two thirds) in Knox County (Appendix 3). KORRNET is in Knox County, and communications flows are simply better in a more urban area. There was no “distance” requirement for the participants - just residence in a county served. The most remote participant required an hour’s drive to visit.

Of 106 applications for which files were found, 65 (61%) were female, and 49 (39%) were male.

CHIPS staff contacted area agencies -- including state vocational rehab offices, home health agencies, and county social service departments -- to inform them of the availability of the CHIPS program. Case workers in the region often used the downloadable application from the CHIPS web site to submit applications on behalf of their clients. The single largest source of applications and inquiries came from a listing in a biennial report of social service programs for seniors published by the Knox County CAC Office on Aging. Applications also resulted from publicity received about CHIPS on television and in area newspapers.

Table 1 presents the reported sources of referrals to the CHIPS program. These sources are indicative of resources that can be used to “get the word out” about such a program. Clearly, involvement by community agencies in the creation and governance of the program paid off in clients. But also note the number of “second-hand” referrals - that is, friends or family members that heard of the program and told the individual about it. These make up about a quarter of applicants.

Non-active participants (8 individuals) were individuals that had been accepted in the program, but were no longer participating. Of them, 5 were referred by a social service agency, one by a home health worker, and one is unknown. However, for the 34 individuals referred by a friend, family member, or self-referred, all but one remain active participants except one. While this is very skimpy data, they suggest that there

¹ Note: Not all numbers will add up because records are incomplete.

may be a support factor involved that encourages participation.

Table 1: Sources of Referrals to the CHIPS Program, 1999 - June 2002

Social Service agency	40
Friend	14
Family member	13
Self referral	7
Home health care worker	5
Doctor	3
Newspaper	1
Meeting	1
Television	2

Table 2 below presents the disabilities reported by participants. They included heart problems, hearing problems, back problems, vision problems and the like. The most frequently mentioned problem (15) was being confined to a wheelchair, followed by heart problems (10).

Table 2, Disabilities Reported by CHIPs Participants, 1999-June 2002

Wheelchair	15
Heart	10
Back	9
Arthritis	9
Vision Impaired	7
Psychological	7
Cancer	7
Caregiver	7
Confined Bed	5
Diabetes	5
-plegia*	5
MS	5
Undet'd	5
Neurological**	4
Emphesema	4
Traumatic Brain Injury	3
Stroke	3
Hearing Impaired	2
Kidney failure	2

*plegia includes paraplegia, quadriplegia, partial paralysis

**includes nondefined neurological conditions and epilepsy

There were single cases of cerebral palsey and lupus.

An examination of the conditions or disabilities of the eight inactive participants reveals no pattern: there were two HIV individuals, two in wheelchairs, but no other conditions in common. There is no condition that pre-disposes a participant to inactivity after initial application or participation.

[There were three HIV applicants, and two are inactive.]

Table 3 presents the sources of mentors and relationships to participants. There was a formal form for mentors to complete, but the records of the mentors are incomplete. Some participants found their own mentors. In some cases, the mentors themselves simply disappeared.

Table 3, Mentors for CHIPs Participants, 1999 - June 2002

Yes	11
Assigned	8
Family	15
Friend	5
Undetermined	3
Category 6	28

Description of the CHIPS community - the hardware and software

Table 4 presents a time line of installations and the participants' status as of June 2001. There is no data to distinguish between donated and purchased equipment. Notice that installations are in part dependent upon applications - if there are no applications, there are no installations.

Table 4: CHIPS: Installations and Status, June 2002

	Installations	Active	Nonactive	Grad	Dec'd	Undet
1999 1st Qtr	9	7		1	1	
1999 2nd Qtr	8	7				1
1999 3rd Qtr	7	4			2	1
1999 4th Qtr	5	5				
2000 1st Qtr	6	1	2	2	1	
2000 2nd Qtr	17	12	2	2	1	
2000 3rd Qtr	13	9	2	1	1	
2000 4th Qtr	14	12	1	1		
Unknown	27	24	1		1	1
Totals	106	81	8	6	8	3

Table 5 presents the types of hardware installed for clients. Note that there is no record for 38 clients regarding what exactly was installed. It is most likely that this data presents a record-keeping problem, rather than the actual distribution of equipment. Applicants who already had their own computing equipment did not qualify for CHIPS, but they could participate in electronic activities. There is absolutely no evidence of mis-use of equipment or funds, simply inadequate record-keeping.

Table 5: Technologies Installed, as of June 2002

CPU	67
Monitor	63
Mouse	36
Trackball	31
Keyboard	60
Surge Protector	37
Mouse pad	15
Cords	20
Phone line	5
Laptop	1
Speakers	7
Keyboard ball	2

Each participant was given a copy of Microsoft Works, Windows 95 or 98, and adaptive technologies as needed. There is a record of the installation of four copies of Zmtxt (a text enlarger), two copies of Dragon (a screen reader), and one copy of Zoomcaps. Again, the staff reported that much more was installed, however there is no record of such installations.

Table 6 presents the additions and adaptive technologies installed for participants.

Table 6, Hardware Modifications, 1999 - June 2002

CPU Replacement	12
Monitor replacement	7
Mouse replacement	5 (one with trackball)
Trackball replacement	1
Keyboard replacement	3
Mouse pad replacement	1
Phone line replacement	1
Jaws re-installed	1
Dragon re-installed	1
Digital keyboard replaced	1

From conversations with staff, there were additional equipment modifications made, however, records were not kept of every service call. These numbers do not reflect the far more extensive use of assistive technologies that the Director and staff believed were distributed. In this case again, inadequate records were kept of activities.

Description of the CHIPS community - the discussion list

An electronic discussion list, based on software such as Listserv, MajorDomo, MailBase, or, in this case, Mailman, can become the heart of an electronic community. These pieces of software are simply mail reflectors, in that a user sends an e-mail message to an address, and the software re-distributes the message to the members of the group. Contemporary discussion list software customarily includes capabilities for varying degrees of moderation, a Web-based archive, and other management tools.

Previous research (Whitney, 1999) examined a collection of patient support discussion lists, and through discourse analysis examined the nature of conversations. A continuum of patterns was found, in that the discussion may be very social, with a high proportion of support messages and personal stories, or may be very informative, with support provided in the form of informational items such as abstracts of research, hospital or treatment descriptions, and the like. Examination of samples of the CHIPS discussion establishes a new end-point for the social discussion: it is far more extreme in social support than those previously studied. This is not a negative finding, rather, it reinforces the assertion in the earlier research that there is a need for such social support, and clients find it useful and helpful: they continue the discussion.

There have been complaints about the discussion list, in that it is too personal, and too chatty or social. There is some empirical evidence for this, as shown in Table 7. A sample of recent² and early contiguous (that is, sent during the same time period) messages yielded numbers of messages in the following categories (a single message could fall into more than one category):

Table 7: Numbers of Messages in Categories in CHIPS Discussion List

Category	Early		Recent
Cheers and sympathies	35		48
General experience	34		33
My experience		20	
Plans -	16		2
Inspiration -	16		23
Newcomer msgs -	9		7
Thanks	8		1
This list		8	
e-cards		8	
Humor -	6		18
Opinion		6	
God/faith -			13
Questions -	3		7
Answer to question,	3		4
Technical problems	3		9
Suggestions	2		2
Apology -	1		2
Others experience		1	
Total instances	179		172

²The date/time stamping feature of the discussion list software is incorrect (recent messages are stamped with the year 2005), so “recent” means “has a higher date, at the end of the archive” and “earlier” means “with a lower date, at the beginning of the archive.”

The categories are the same as those used in a previous research project, to permit comparisons at a later time. The discussion is clearly a social and support discussion, with 91 (51%) of the messages being of this nature (cheers, general experience, my experience, inspiration). There are very few questions.

It is difficult to use this data to assess trends over time, because the actual dates are unclear, and we could not establish events in “real life” that might have caused the increase in numbers of inspiration messages, or those of the “cheers and sympathy” variety. We also cannot because of software problems determine how many participants were subscribed to the list at the time of the postings. If, for example, there were substantially more participants in the “recent” period, we might have expected to see the numbers of these postings increase even more than they did. Without that data, we can’t make these assessments.

We can, however, note the very social nature of the discussion, and previous research has demonstrated that this is a normal and essential activity in discussions of this nature.

Examining the messages as a percentage of postings reinforces the above statements, as shown in Table 8 below.

Table 8, Percent of Messages in Categories in CHIPS Discussion List

Category	Early - Percent	Recent - Percent
Cheers and sympathies	19.44	28.07
General experience	18.89	19.53
My experience	11.11	
Plans -	8.89	1.17
Inspiration -	8.89	13.45
Newcomer msgs -	5.00	4.09
Thanks	4.44	.58
This list	4.44	
e-cards	4.44	
Humor -	3.33	10.53
Opinion	3.33	
God/faith -		7.60
Questions -	1.67	4.90
Answer to question,	1.67	2.34
Technical problems	1.67	5.26
Suggestions	1.11	1.17
Apology -	.56	1.17
Others experience	.56	

The analyst noticed that “over time, the list gradually turned more social and idle ‘thinking of you’ e-mails became a substantial part of the discussion. In the beginning however, there was discussion of handicapped parking, dealing with family members, and more focused topics.”

Responses to the Evaluation Questionnaire

The full questionnaire is in Appendix 5. It was designed as a telephone questionnaire, however, most respondents replied via e-mail. E-mail has become a way of life for most of the participants.

Of the 82 active participants in the program, 60 individuals responded - just under 75%. For a survey of this nature, this is very good. The situation for each non-respondent was reviewed by the evaluation team and the CHIPs staff, and it was determined that this rate of return was as good as it was going to get because of various disabilities and individual situations.

A. General questions - the best part of CHIPs, the greatest challenge

Responses regarding the “best” part of CHIPs fell into three themes: communication, removal of isolation, and personal challenges.

All responses mentioned the “joy”, “delight,” and need for e-mail as a way to “bring part of the outside world in to me,” to “brighten the day,” to “be able to feel a part of the world and be in touch with everything.” Participants reported that they felt connected again. They were no longer spending their days watching television. Several mentioned explicitly that they were part of the “CHIPs family,” and this family supported them in their quests for dignity and connection. They met new friends, they found old ones. They found connection. Distant family and friends were accessible, and even more important, the connection was affordable.

The theme of isolation was also common - with CHIPs, this was removed. They could “get on line anytime.” Participants enjoyed “meeting people who understand pain, suffering, isolation.” One even reported enjoying WebCams. They enjoyed solitary pursuits like games, but it was the connection to others that made the difference.

For many, it was a personal challenge to learn how to use a computer: this was a new task, but finding the personal courage to attempt it was a reward in itself. “Finding the courage to try new things” was implicit and explicitly reported. Learning the tasks associated with the computer “boosted their confidence” in this as well as other tasks. Personal accomplishment was important to participants: they noted loving “learning something new” and “wanting to finish my education.”

The “best” of CHIPs participation was also its greatest “challenge.”

Having a computer at all was as much a challenge as it was a blessing. Participants reported personal challenges - learning to use a computer “as a blind person, at my age!”, learning to type, learning to work with e-mail, learning to integrate technologies

such as scanners, coping with junk mail. For some this was very personal - "participating at all" was an accomplishment, "to be accepted" by others was humbling. "Realizing I could make a difference in other people's lives" is a powerful indicator that people grew beyond their own situations to reach out and help others. Function keys on the keyboard were a challenge. Remembering "to send in the monthly report" was another. Typing was not trivial - "with one hand," or "typing faster" were challenges as well.

When the computer went down, "isolation sets in" - and "part of me is lost." Keeping the equipment up and running is clearly crucial to the participants.

B Mentors - availability of one, what did they do

Overall, the mentors were a helpful group, and were appreciated by all of the participants. Eighteen of the respondents mentioned family members serving as mentors, seven mentioned friends, and five explicitly mentioned volunteers. Four individuals indicated that they were comfortable with their computers, and didn't need assistance, calling CHIPs staff when needed. One individual reported that a mentor had been requested, but there was no response. Seven individuals reported that they simply "had one" and provided no more information.

The participants reported a varying pattern of interaction - "one visit," "3-4 times," "one hour per week," "every day." One person reported that mentor assistance was always "a phone call away."

They helped with the basics of computer use: one reported that "I went from not knowing how to turn it on to going everywhere." They learned to "back up e-mail," "build bookmarks," "make folders," "how to compile a medical history," "make Christmas cards," "make business cards," "connect to sites," "make labels," Wordpad, Internet, chat, "file save," "paste/copy," and "not to be afraid of the computer." Greeting cards are popular - three respondents mentioned them. They "worked with me til I got it right." Several people indicated that they wished they had more time with their mentor, but understood that they were busy.

There were very few complaints. One noted that "the mentor went too fast, I need to write things down." Another mentioned that she had had three mentors, and "they each want to teach you a different way." One said that the mentor "should respond sooner than 3-4 days." Several noted that they would have appreciated more instruction. And several noted that their mentor "disappeared" or "moved away."

C. CHIPS staff - availability, what could have gone better, what problems could not be solved

The CHIPS staff received high praise: "great," "the best," "could not have had better help," "fast," "supportive," "fantastic," "always return calls, mail," "get back to you in less than 24 hours." About three quarters reported that they had had technical problems of one sort or another, but they had been resolved. Several individuals were appreciative of the help and would have liked a quicker response, but knew that the staff was very busy.

One would have appreciated documentation and explanations in large print.

Most respondents had not heard of job opportunities, but a half-dozen would like more information about them. Two were concerned about the impact of such activities on their Social Security checks. One was "aware but found prejudice against being handicapped." One reported having found a job online doing "mystery shopping." (In mystery shopping, which is a whole cottage industry, people are paid to visit a shop or Web-based service and report back on the service that they received. See <http://www.volition.com/mystery.html>.)

D. Equipment - did you have what you needed, could you purchase a new computer

There were no complaints about the computing equipment provided, and there was general satisfaction with the equipment. Several respondents reported switching to a track ball, with great success. Several also requested a printer. Three reported receiving scanners and printers as gifts from their family.

A trackball has proved to be a popular option - about a third of respondents mentioned one. One participant noted "When I got the trackball it was like someone took away my VW and gave me a Ferrari!"

Nine individuals reported explicitly that they did not have the resources to purchase a newer computer (living on just over \$500 a month, this is not a surprise).

E. Software - what did you use most often, what did you download from the Web

The most-used software included communication tools (Outlook Express (13 mentions), e-mail (6), ICQ (2), MSN Instant Messenger (2), Yahoo Mail (2), greeting card programs (5), Juno, Hotmail), search tools (Internet Explorer (10), AOL, MSN), productivity software (MS Word (3), Excel (2), MS Works (2), Lotus Organizer (2), Corel Word Perfect (2), Adobe Reader (2), Adobe Photo, Printshop, MS Money), games (in general (4), scrabble, Chinese Checkers, mahjong, card games (3), casino, golf, solitaire (3), and P-51 WWII simulator), and other miscellaneous programs (Tri-peak, Big Screen (2),

Braille keys (2), Zoom Text (2), Free Cell, HTML editor, music (2), calculator, CD player, Bible on CD, Mavis Beacon Typing Tutor, and Rio Port audio.

Two individuals reported that Dragon Naturally Speaking had problems with the Southern accent.

Downloading software appeared to be a troublesome concept, in that the question was not answered often. Five individuals reported downloading screen savers, three reported games, two reported the Real Player. Webshots, Napster, "images" and a virus scanner were reported once. One individual said that he tried to download some software but couldn't get it to work. Another reported that instruction would be helpful in this area. Two reported that they had no space to download software. One reported fear of the process.

Requested software included:

- voice activation software (2 mentions)
- photo software
- air combat game
- Word Perfect
- advanced art / printing
- flight simulator
- ALA medical program
- typing tutor
- math program
- Stephen Hawkings equipment
- printers (5)

One individual, delighted with the communications capabilities and overall strength of the CHIPS program reported "does not know how to use software, none provided" and "haven't used any software."

F. Research - what sites did you visit, what did you research

The largest category of sites visited was medical information. Fourteen mentioned medical news in general, four mentioned drugs and prescriptions, three mentioned the Mayo Clinic. The 18 other medically-related notes included specific conditions, hospitals, and web sites such as WebMD.

The most popular general research sites were for news and newspapers (12), television programs and stations (8), genealogy (7), music (7), Blue Mountain and other card sites (6), Bible study and religious sites (6), weather and seasonal sites (6), history sites (4), inspirational sites (4), government sites (3), sports (3), hometown newspaper (3),

shopping (3), games (4) , cars (3) travel and vacation sites (4), horoscopes (2), Yahoo (2), Dogpile (2) and fire arms (2).

Other topics noted include dogs, photos, screensavers, Real Player, Media Player, Napster, state parks, stem works, crafts, public library, KORRNET, Google, company information, friendship, books and reviews, animals, food markets, Flogo.com, entertainment, biographics, MSN, AOL, and art.

Two individuals reported seeking live chats, and consistently found them empty. Five reported that they had a hard time finding information that they needed (one specifically noted medical information). Three reported they'd like to get involved in genealogy.

[It is clear that the participants have a wide range of interests. However, there are sufficient commonalities such as news, medical information, television information, music, and greeting cards, that it would be well worth the time to develop guides to these resources and incorporate guides developed by others.]

G. Community - with whom do you communicate, opinion of "listserv", government services accessed

E-mail was specifically mentioned by 24 people, as a way to connect and communicate with family and friends. Several individuals noted the numbers of contacts in their address books as an indicator of how large their communities had become. E-mail "means everything," is "fun," is "convenient and speedy," offers "emotional support" and "moral and spiritual support." It "is a Christmas present every day," "something to look forward to each day." It makes a participant "feel less lonely." Phrases of liberation included "freedom," "access to the world," and it opens a "new world " for two. Five individuals mentioned that they enjoyed meeting new people this way. For others, it simply is "entertainment" and "keeps them occupied."

Previous research (Whitney 1999) has shown that participants in electronic discussions do turn to them for questions of all sorts. One participant writes, "If you ask a question, someone will answer or know someone who has an answer." Not only do participants use the listserv for discussion and support, they use it for information seeking.

One participant observed that she was "happy to find others in similar situations." Note in the discussion below regarding the listserv, and the chat, that some share in this sentiment, others find the constant references to conditions depressing.

For two, the fact that it is no cost is significant - this is likely a sentiment held by others who are enthusiastic about being able to be in touch with family and friends.

There were a few negative comments. One respondent said that she “can’t use e-mail.” For one, e-mail “doesn’t mean much” (but she’s still very happy with the program). Another wants additional training in its use. And another wants help with learning to type better.

The listserv is a mixed blessing. For some (8), they are on it daily, it is a “lifeline,” it is a “Godsend, always there for each other.” Three individuals find it helpful and useful to be in touch with others going through similar experiences. However, another finds that there’s just too much complaining. There are a few who reported being unaware of it (2). For six, it’s just too much - too many messages, too many personal messages, too many cards and verses. One objected that it “doesn’t speak directly to you.” Others are just too busy or don’t have time to participate.

The CHIPS Chat is troublesome for some participants. There were just 17 comments overall. Two had bad passwords that could not be resolved. Six reported not knowing about it. Two couldn’t take all of the sad stories, and found it all depressing. Two people noted that other people type faster than they do - this can be a real problem in a fast-moving chat. One noted that it’s been offline for a while. Two reported that they can’t find it. One just doesn’t understand it. Another objects to its lack of focus. Another just doesn’t care for chatting. One finds such activities “dangerous” and opportunities for viruses. Three reported that they chatted if they found someone in the room, or if they had time.

Just a few individuals reported participating in other chats and discussion groups, however, they were enthusiastic about their activities.

Accessing government services online is not a popular activity for this group. Six were quite active, in writing Congressional members, in accessing Social security (3), birth certificates, marriage licenses, downloading forms from the IRS, changing a driver’s license address, participating in a Senator’s request for citizen comment.. Five reported that they had not accessed such sites (they didn’t need to, or hadn’t tried). One would like to know more about such sites.

H. Caregiver - what information did you seek, what have you learned, interactions with other caregivers, how to improve services

Eleven care givers responded to the survey, and a majority reported that the connection to the Internet had given them a better understanding of the condition of the person they were caring for. They said that they sought information about the condition, information on drugs, and other treatments. They also sought information on the care of the elderly in general, and senior citizen programs. One visited a doctor so well informed that the doctor thought she was a nurse.

Even if they were not caring for someone, several reported that they would want to participate in CHIPS - "it's fun," one reported. They also gave reasons such as avoiding loneliness. CHIPS "keeps your mind working" and helps to "get away from everything."

Only a few reported interacting with other care givers. Those that did celebrated victories, discussed worries, and provided support and prayers. This lack of interaction was unexpected. They may have been unaware that others were in their circumstances, or had other reasons for not coming forward. Special services just for caregivers might enhance their experience. These services could be as simple as an offer to set up a special discussion group for them, or, if they are willing, developing just a list of e-mail addresses of other care givers.

Overall, the caregivers were very pleased with CHIPS. The only request was for additional teaching aids and manuals for beginners. This is not unreasonable - at this point there are a number of excellent tutorials and help sites on the Web, and these are not listed on the CHIPS list of resources.

I. Overall - interactions other than electronic, changed your life, what would you change

Participants were asked to describe any interaction that they had outside of the electronic community. Five individuals reported attending get-togethers, four reported that they enjoyed telephone calls with others. When a participant's Mother passed away, the participant wrote that several Chippers visited at the funeral home. Another reported that several Chippers had visited their home, the hospital, and at funerals. One identified a friend with similar interests and beliefs, and they got together at a local grocery store. The interaction outside of the electronic is not extensive, but nonetheless it is clearly important to and appreciated by the participants.

The CHIPS experience was a life-changing one for nearly everyone. For some, it was social - it lead to improved social skills overall, they met new people and made new friends. It means that "days are filled with joy with the ability to communicate." For a few, the computer itself was company. Several mentioned the giving and receiving of encouragement. For others, it was personal - they saw others in circumstances similar to their own and felt less alone in their struggle. Or, they saw others who were in worse circumstances and realized that they weren't so bad off after all. Depression was alleviated for four participants. The convenience of being able to order prescription drugs online and have them delivered to the mailbox was liberating. For yet others, it was the intellectual stimulation - learning something new, being able to turn the television off, no longer being left behind. Some found the informational and research aspects of the program as key - being able to do research and find information.

The program "opened up a new world" for ten respondents - but from the responses, many, many more would agree with those words. For one it made being "homebound tolerable." It "has been the giver of life." One participant came "out of the dark ages into the modern world." Another "now has a life." For one it simply meant "everything."

There were two respondents who reported that their lives had not significantly changed. However, they both liked the program, found it useful, and had no suggestions for changes.

Very few respondents remarked on changed physical conditions, a few were improved, and few felt a little worse, most who remarked on it at all reported no change.

Perhaps the most profound and universal reaction to the CHIPS program was the reduction in isolation that the participants felt. In the survey responses, 16 individuals mentioned this explicitly, a further 14 did so indirectly. Several reported "not feeling so lonely." Another remarked that the "reduced isolation was the major enjoyment and benefit" of the program. One said that it addressed the "horrible isolation of an active and lucid mind trapped in an uncooperative body."

The survey asked the participants if they would be willing to help others as a CHIPS volunteer. Five individuals said "yes" directly. Six others said they'd like to but they needed more training, or if the task was something that they were capable of doing. Eight individuals said they could not help others, because of other responsibilities, or, they did not have the time or talent.

Finally, the respondents were asked what they might change about the program if they could. Eleven individuals said they could not think of anything to change. Seven individuals wanted better computers, with a faster connection to the computer. Seven also wanted more mentor time. Two requested more teaching aids. There were also requests for more disability advocates for the legislature, a color printer, more paid staff. There were several comments on the large number of personal messages, advertisements, and other clutter on the listserve.

County Walk

The computer laboratory in County Walk, established as a part of the CHIPS grant, served seniors and teens alike. In the Fall of 1999, a study was conducted of the information needs of the users of this laboratory. It only sampled a fifth of the users, and the data was collected on Fridays, which could have influenced the result in unknown ways. The full study is in Appendix 9.

The study found that the users were 40% female and 60% male. It found that 24% of the users were in their 70s in age, and 29% were in their 20s. Anecdotal evidence suggests that indeed the young people were often working with the seniors, as well as in their own groups.

The lab served more than just Knox County: 78% were from Knox County, but the rest were from surrounding counties, with one individual visiting from Florida.

The researchers were interested in where the users of the laboratory had been, just before they visited the lab. We found that their previous visit had been to the locations shown in Table 9, below.

Table 9, Previous Mall Locations of Lab Users

First stop	51%
Retail store	20%
Food court or restaurant	16%
Health center	7%
Game arcade	4%
Government office	2%

Note that for half of the users, the lab was their destination (or at least their first destination) when they came to the Mall. Note also that very few of them came first to the government offices in County Walk. It can't be taken from these data that the Lab was their only destination.

How did the users hear about the Lab? The survey found the following responses, as presented in Table 10 below.

Table 10, Awareness Mechanisms for Learning about the Lab

By passing by it	53%
Word of mouth	24%
Senior exercise class	16%
Library computer class	4%
Library	2%

Interestingly, there was no window from the Mall walkway into the Lab - in fact, the door into the lab is inside of the Walk foyer, and not easily seen from the walkway at all. The users must have been responding to the sign on the wall outside of the County Walk area.

One third of the users reported that the first time they ever used a computer was the first time that they had come to the Lab. Clearly, the classes that were held in the lab were needed and appreciated. Of those surveyed, 9% were first-time visitors, 91% were regular users. Most of the users surveyed (73%) did not have access to the Internet at home. The Lab is meeting a very real community need for access to the Internet for a segment of the population.

The activities performed by the users are diverse, as demonstrated in Table 11:

Table 11: Activities of County Walk Lab Users

Research	67%
E-mail	53%
Games and recreation	47%
Business and finance	25%
Chat rooms	9%
Word processing	7%
Sports	4%
News	2%
Travel information	2%

A lab full of stand-alone computers would not have served this audience - it is the connectivity to the Internet and its resources, and the ability to communicate with others, that brought people to the resource. The types of information they were seeking

included topics in Table 12 below.

Table 12, Subjects Researched by Lab Users

Medical and health information	36%
Business and financial	22%
Entertainment	18%
News and weather	18%
Maps and geographic information	16%
Games	11%
Sports	11%
Science and technology	13%
History	11%
Travel	7%
Jobs	7%
General research	4%
Government and military	4%
Art	4%
Genealogy	4%
Bible study	2%
People and places	2%

Classes in health information and business and financial information would have been well received by this group. Happily, 89% reported that they had been very successful in their searching, and 11% had been somewhat successful.

The users were asked for their general reactions to the Lab. All of the comments were very positive. Some of them included:

“I would like to see it open ‘til 9 and on weekends.”

“It’s a really neat idea.”

“I just love to come out here. I live alone and it’s good to get out of the house and have an interest.”

From all evidence the lab is a success.

The 12-station lab finished its term in December of 2001, after serving thousands of visitors and offering hundreds of classes. The local government was so impressed by the effort and its activity that it took it over for permanent staffing, and opened another lab in a different part of the county.

Challenges Met

One of the difficulties in conducting this evaluation has been the lack of data about activities, and the lack of staff to do so has been documented in the Quarterly Reports (3rd Quarter 1999). This refers to both the database of participants, and general record keeping practices. The SQL database which had been used to track the progress of participants crashed in the first quarter of 2001, and was never recovered. The staff finally switched to Excel for the duration a year later. Promises of recovery were simply not successful. In terms of general records, the reports also note attempts to locate another individual to help supplement the three volunteers and the staff member assigned to the task of record keeping. There was a survey of participants in the first quarter of 2001, and the responses were apparently not retained. We should note, however, the Quarterly Reports prepared for the granting agency are detailed, informative, and very helpful in the evaluation process.

Another difficulty has been in managing and strengthening the mentor program. In the Quarterly Report (3rd Quarter 1999) it is clear that the computing skills held by the participants need far more assistance than anticipated. While a strong group of family members aided many of the participants, there were insufficient numbers of them for many. It appears that the issue is not the number of mentors: in the 1st Qtr 2002, there were 100 installations, and 55-65 mentors, and this was still not enough. Compounding the problem is a relatively high rate of turnover. Mentoring in this environment is challenging: some respondents in the evaluation survey reported mentors that visited once, then disappeared. The issue is the skills, more than the numbers.

The amount of time to install a computer and set up the necessary hardware, and then maintain it, was sorely underestimated. It was exceedingly difficult to keep up with the demand, and even to keep up with the accepted applications. (Quarterly Report 4th Quarter 1999). This compounded by the difficulties in locating mentors with sufficient skills made the situation difficult for everyone. And, the problem compounds as new installations are made. There is no objective test of one's computer abilities: self-reporting is highly unreliable, and individuals develop different skills at different rates. At one point, a hiatus was declared to let everything catch up. We should note, however, that the goals of the program (100 individuals served) was met. In part, however, the issue of the pressures for installation, and the time that it took contributed to the record-keeping problem. The limited time was spent on people in the program, and its technology, and not records.

Knowing participant/mentor needs is crucial to the success of the program, and participants were routinely asked to update the CHIPS staff with information about their situation. Surveys of mentors complemented the information gathering efforts, such as in 2nd Qtr 2001.

In the second quarter of 2000, a "Tech Team" of about 8 volunteers was established to help out with the installations and maintenance, and a listserv was set up for them. These individuals had fewer skills than anticipated, and by the last quarter of 2000, the number had fallen by half. At this same time, a virus hit the listserv, which taxed everyone's capabilities and time.

From the 4th Qtr 2000 report, "The challenge is to find relatively technical, computer-savvy individuals who also have a sensitivity to people with disabilities and the myriad situations one finds in home visits." This is clearly the issue for mentoring support: this combination of technical skills and sensitivity. This is, as the program discovered, a rare combination.

By the end of 2001, the CHIPS administration had insightfully realized a fundamental problem with the design of the program: there was no "end-game." That is, once a person is accepted into the program, there was no way for them to "graduate" so that space could be made for other, new applicants to participate. Participants clearly can stay on the listserv forever at no cost to anyone. However, with a staff of two individuals plus mentors, 100 clients can be served at minimal levels. After a certain period of time, dependent upon individual circumstances, the participant would keep their computer, but have to pay for telecommunications costs, and would have less access to CHIPS staff. But, they would still have access to each other. From the Report, "Ultimately we hope the new policy will allow us to serve the maximum possible number of clients each year, launch successful clients toward independence, and still provide a safety net for those who need Internet service or technical support."

Application of criteria

The original criteria for evaluation specified quantitative measures, such as the distribution of Pentium-class computers and the application of assistive technologies as needed. It also specified qualitative measures, such as "to reach homebound members of the community and change lives for the better" and "a vibrant online community of CHIPS users and supporters is created." These criteria were developed before the onset of the project, and they could not anticipate the events that would occur.

From the perspective of the participants, the project was an outstanding success. There is indeed a vibrant electronic community of people who had spent their time watching television, and now interact with a community of people by locally and remotely, sharing insights, prayers, support messages, and information. The project won international recognition from the Stockholm Award. It made a real, documented difference in the lives of over 100 people. And this influence will continue.

Not all goals were met. There was not enough technical support - the original

designers of the project did not anticipate the degree to which this was needed. There are not enough records of activities - there was not enough time to create such records. And there were technical failures. The opportunities for employment did not materialize. Mentors disappeared.

But the positive values, the positive differences in people's lives, decidedly overshadow these difficulties. The evaluation survey, and the comments by participants, clearly demonstrate this change and impact. Changes in staff, and a lack of records, and a lack of assessment measures, prevented needed changes in procedures and best practices.

The overarching mission of the project was to reach homebound people, and to show how information technology can deliver important services to those in need. And in this mission, the project was an unqualified success, and well worthy of replication across the country, and across the world.

This evaluator wishes that she had the contact information for those around the globe who requested replication information from the Stockholm celebration. Those records do not exist.

Recommendations to CHIPS Administration

The following recommendations are offered, based on the evidence provided, for improved services to CHIPS participants. They are also offered as suggestions for modifications to the program should others wish to replicate its services and programs.

Records Management

Part of the difficulty of the evaluation has been a lack of records. Evidence of success would be greatly improved by records (at least in numbers) of applications to the program, equipment provided to participants, trouble-shooting calls, and the like. While some of this information is available, it is spotty. In part, this reflects a staffing problem: there was simply not enough time to keep records of activity. In part, however, it is a lack of policy and best practice.

Better Computers and Connections

There is clearly an appreciation for the computing equipment and connections that the participants now have. However, there is keen interest in having them upgraded. Sources of funding and other approaches might be taken to identify newer computers and the resources to install them.

Mentor Program

There have already been several attempts to strengthen the mentoring program, to increase the number of mentors and the time that they spend with the CHIPS participants. CHIPS administration should continue to experiment with different structures to provide the training and human contact that the participants need.

Discussion List

The evidence is clear, from the analysis of the list and from the responses to the participant questionnaire, that while the current list is fulfilling a very important need for the CHIPS community in providing social support, there is an “informational” need that is not being met. An informational, moderated discussion list would provide a focused complement to the necessary social support group.

Evaluation Planning

While evaluation was intended to be a part of the program from the beginning, it was not. It would be helpful to develop routine evaluation measures that are understood by the clients from the beginning of their participation in the program. In a sense, this is another part of records management.

Computing Resources

While it is clear that most of the participants far prefer to have help from an individual in their presence, it is also clear that it would be impossible to provide the daily support that some would like. Expanding the computing section of the CHIPS web site, and

making these resources more prominent and easy to find would be a step in the right direction. These are not only for the participants, but for the people who are trying to help them.

Given their interest in connection and their penchant for games, it might also be useful to point them in the direction of multi-user games.

Operational Details

An interview with one of the technical support staff member yielded a number of operational recommendations, such as avoiding Outlook Express and software recommendations for technical support. These are detailed in Appendix 11.

Participant Comments

From time to time, participants were surveyed to assess their progress and their thoughts about the CHIPS program. These statements represent most clearly the power of community, and the powerful impact of the program. These were some of their contributions:

On relief from depression:

“Unable to participate in former activities where anything requiring standing or walking for long periods, you become almost reclusive..... Upon becoming a member of the Computers for Homebound and Isolated Persons a new world opens up! You are able to chat daily with others just like yourself. Making new friends who share special uplifting verses, tidbits of their households and families, important medical information they've learned about, and references to Web sites of special concern is a high point of your day.... Suddenly, your world has expanded and so has the number of your friends as you begin contacts further and further away... your new world is exciting and no matter what disabilities you half, you can function again and feel like a part of life.”

And another,

“Mom is continuing to make progress. She can most of the time get into her mail and keeps it read daily. She is learning but not real fast. She is certainly enjoying chatting with others and getting all the encouragement messages and funny stories from both the chips family and from us. She gets aggravated yet since she is not a typist and it takes her some time to type something but overall she is doing real good. I think within another week or two she will probably be able to do this herself. She continues to need encouragement, which we all do. As I stated before both (a friend) and myself help her all thru the week. She has learned to go to next or previous and clear her emails. Again, she is very grateful for the opportunity to see how all this technology works and to have an outlet to get out of the house and occupy her mind when she starts worrying about everything. What a wonderful thing you are doing and how grateful both she and our family is to have this opportunity.” (3rd Qtr 2000)

Another CHIPS Participant wrote:

“I just want you to know that I appreciate the CHIPS program and feel that it has opened doors to a lot of lonely people. I would sometimes go all week seeing no one but my husband and, like I have said in previous e-mails, this has opened up a whole new

world and I am making new friends. Thanks again for all your help and encouragement.”

On a greater sense of connection:

“. . . I wanted to say a special thank you to you and the staff. This morning I forwarded the Web site to (our daughter), a few hours later she called me. She raved about it something funny!!!! She started talking about the pic of me and Prince I wanted to thank you for the pics and the chance I had to forward them to her. She was a little tear voiced, as she said ‘It brought home even a little closer!!!!’ Love and Thanks” (1st Qtr 2000)

Another writes:

“As for family contact, have no family or friends in Tennessee. My children or I can not afford long distant phone calls. Result: we only contact once or twice a year. None of us are letter writers, all do not have the time to sit down and write letters. We are all business work people, no time to write each other. . . . Now with multiple health and disabilities, plus other problems, it is comforting to me to have fast E/mail capabilities to be able to contact three of five children plus a grand daughter. With the ability of E-mail, I have more piece of mind that when I am in trouble I can contact them for help. . . .

And another:

“I want to write several books. Having the computer makes this more possible. To have the ability to put all my notes, {thousands} To be able to put them on discs into proper book format. . . . My total life was devoted to research and development, people motivation training, systems and procedures, plus management from age seventeen. Now at age seventy-two with multiple health and disabilities, my brain is still working over time. There are several fields of research that I now can do with the computer to develop a variety of new product innovations.”

“Over my lifetime have several patented innovations. And many more kept confidential by my employers. I still have much more to accomplish. I do not want to take my know how, talents capabilities, to my grave. With the computer I can put it into a computer system for others to learn and move forward, without these individuals trying to re-invent the wheel etc. . . . Without the computer I would not be able to reach my goals.” (1st Qtr 2000)

And another:

“As you know I'm a diehard advocate for the disabled. In my pre-computer era, I worked hard to produce the materials < mostly knowledge> to help people, i.e., governments, large and small businesses, civic organizations, teaching institutions, churches and individuals understand the rights and responsibilities associated to the Americans with Disabilities Act, 1990. *The requests for information had to be limited* since my correspondence was done mostly by hand, requiring hours per reply. In this area post-computer, my ability to respond to every inquiry in a timely manner is possible. It also has allowed me to expand writing legislation at the state level.

“And further, my computer has allowed me the opportunity to perform additional research in hopes of raising the quality of life for those with disabilities, and my community as a whole. On more of a personal area, having a computer has made it easier to stay in touch with my family members, have better options to pay bills, where stamps or a trip to the post office isn't feasible. Additionally, researching medications and procedures, helps me play a more involved part in my own health care. My computer allows me to give back to those who have given, and I hope to continue, thanks to being a CHIPS participant.”

(It should be noted that this particular individual is quadriplegic and has recently been provided Dragon NaturallySpeaking software to be able to input text on his computer, as the atrophy in his hands have rendered him unable to type in recent months.)

And another:

Progress Report #2 “I just wanted to send you an update on my computer and me. We are getting along just great. I love my computer and my computer loves me. We were made for each other. I am learning more and more every day, and believe me there is something new to learn every day. *There is no end to what you can do with a computer.* I never realized I was missing so much. My computer has opened up a whole new world for me. I have [several debilitating conditions} so I cannot get out very often because I am in so much pain. And in the winter or damp weather, I am at home all the time. *But thanks to people like CHIPS and my computer I can visit all over the world and never leave my bedroom.* I am so thankful some one cared enough to reach a hand to people like me. If it had not of been for you people, at this time of the year I would be a prisoner in my own house, but now I can turn on my computer and take off. I thank each of you from the bottom of my heart.” (3rd Qtr 2000)

There is also an example of individual who is homebound but who is not a CHIPS participant. This individual e-mailed CHIPS and stated the following:

“I've looked at KORRNET's web site several times and like how it's evolved. I read an article in the Sunday Knoxville News Sentinel several weeks ago and really appreciate

the CHIPS program . . . I've been looking for group like CHIPS.”

This individual was subsequently invited to join the CHIPS listserv and the Listserv Greeter replied the following:

“Well we are tickled to death to have you . . . I am like you in that we both didn't give up a and we still have our sense of humor . . . I wanted to tell you that you're at the right place, we are all friendly here and we try to be as close knit as we can . . . We have a lot of resources at our reach, and if there's anything we may help you with or anything you need, just let us know. . . So please make yourself at home, you are one of us and we are tickled to see you . . .”

On Saving Lives

.. achieved through the computer since I spoke to you on the phone (and before of course). It was instrumental in practically saving (my daughter's life) and showing us a new path of hope that may bring her back to us in body as well as in mind. Researching on the computer has opened up new avenues to look into what really ails her. And we have already used information garnered from the internet to solve long standing medical problems that the doctors could not get a handle on. We are blessed in having an open-minded doctor as (my daughter's) primary care physician. He did not have any ego problems or bruised self esteem when we showed him all the data and information that we downloaded from the computer. He accordingly ordered whole new tests, changed the medication etc., and today she feels a whole lot better. We feel we have a better understanding and a better grip on her problem, and we are burning up the internet to getting info, data and new development /technology quotes for products to help her from places in New Zealand, Europe and Japan. We will be talking to Bora-Bora or Timbuktoo if we have to. But I talk too much because of how excited I am with all these new developments....” (1st Qtr 2000)

Poetry Challenge

A poetry “challenge” was held in early 2000, and one participant wrote:

“Freedom is one thing we all share as on the key board we pass many hours.
Sharing a joke a smile or two chasing away those those awful blues
Sharing worries our sorrow and cares, making the load some- what lighter.
Knowing on the e-mail our message will go and you will be there who understands,
offering words of kindness of hope and cheer.
Freedom to also explore, increasing our knowledge so much more, as on the web or
internet we go,

Finding things that we all enjoy.

Freedom to choose what we want to enjoy and share with each other by typing it out on the old key board and pressing the word send and letting it go ,
hoping cheer it will bring to those who receive .

So to the Chip's Program thanks we do give for this wonderful blessing that sets us free from hours of loneliness and isolation giving us means of communication.

Sometimes letting out our frustrations.

Giving thanks for the freedom we have to live in country where some thought is given.

So from a group of people with a lot to learn,

Thanks for making our days of isolation so much fun.

When on the line we go let, our joy's and sorrows flow knowing that on the other end is one who lets you know it's ok just let it go.”

References

Whitney, Gretchen. "Private Lives and Public Spaces: Investigating Electronic Communities." Presented at the Mid-Year Meeting of the American Society for Information Science, 1999, Pasadena, CA.

From: "David Massey" <dmassey@kornet.org>
To: "Don Druker" <ddruker@ntia.doc.gov>
Date: 2/10/03 9:16AM
Subject: Article on CHIPS

Don,

Attached is an article about CHIPS that is to be published in the journal Technology and Disability sometime this spring. It was one of the things I was waiting on. It just arrived this morning. Somehow I would like to incorporate it by reference in the answer to the second goal under project outcomes ("CHIPS clients feel a greater sense of connection..."). Could we add that to the report once we know what the publication date is?

The author is Natalie Bradley, whom I believe you met when she was our mentor/client coordinator.

Thankfully she included the reference to TOP. I am just hoping the journal includes it.

David

Abstract:

In an interesting twist to the initial fear that the access to internet would result in a more isolative community, the CHIPs program (Computers for Homebound and Isolated Persons) inspired an online community for individuals who were homebound. The subjects began to get to know one another through the Internet, thereby making virtual friends with others in similar circumstances. Elderly citizens, disabled individuals and caregivers found themselves with a new sense of camaraderie and friendship. A one-year follow up to a questionnaire indicates that the subjects' level of satisfaction in the amount of contact with others increased significantly. These results do suggest that the intervention may cause significant changes in the lives of isolated individuals, a change worthy of more formalized research.

COMPUTERS AND INTERNET MAY DECREASE SENSE OF ISOLATION FOR HOMEBOUND ELDERLY AND DISABLED PERSONS

Submitted by: Natalie Bradley, MS, CRC, ATP, State of California
Department of Rehabilitation
William Poppen, PhD, University of Tennessee

Introduction

Computers with Internet connectivity were provided to homebound and isolated elderly and disabled individuals in the urban and rural areas in a metropolitan area and the surrounding counties. Volunteer mentors visited the subjects' homes to teach computer and Internet skills. The participants were able to increase the amount of communication with others and reported feeling more satisfied with the amount of contact they had with others.

CHIPs PROJECT DESCRIPTION

Setting

Beginning as a grassroots program, volunteers from the community installed *donated computers and provided training to the recipients*. The program, CHIPs (Computers for Homebound and Isolated Individuals) continued its collaborative efforts by joining KORRnet (Knoxville, Oak Ridge Regional Network) to acquire free Internet access and formal management of the program. The result was a \$500,000.00 grant from the United States Department of Commerce, Technology Opportunities Program (TOP) to provide new computers and equipment.

Eligibility Criteria

Applicants considered eligible for the project were required to provide information verifying that they were unable to leave their homes and were isolated from the community as a result. Caregivers for elderly and disabled homebound individuals could also apply. Personal income was not a factor considered in the eligibility criteria.

Local agencies such as the Office on Aging, home health agencies and dialysis clinics were the main source of referrals. Many self-referred individuals had learned of the program through newspaper or television stories on the CHIPs project.

Applicants were required to submit an application that provided demographic data, a questionnaire consisting of a 1-5 scale, and subjective statements from the applicants. Applicants who were unable to complete the necessary materials were given by personal assistance via telephone or home interview. A home visit and interview was also completed on all applicants appearing to be homebound and isolated. Upon completion of the interview, the information was then presented to the CHIPs/TOP Review Committee for a final determination of eligibility.

Mentors

Prior to installing the computer, a volunteer mentor was assigned to teach email, Internet and basic computer skills. Volunteers from the community often participated, but many volunteers originated from the participant's family or circle of friends. Mentors signed an agreement consisting of a commitment to make weekly visits to the participant's homes. Mentors worked with the participants approximately 3 months to one year, depending upon level of need.

In order to assess progress, the participant's only requirement in the CHIPs program was to email a progress report to the Program Coordinator once every two weeks, describing the skills learned. Often the participants also described various achievements or stories that clearly indicated positive effects on the lives of these individuals.

CHIPs Online Community

The CHIPs Website at www.kornet.org/chips was the first stage of the online community that eventually developed. The website contains a section called "Chipper's Corner," aptly named by the participants. It is composed primarily of the participants' contributions such as photos of the members, their pets, hobbies and some poems and short stories written by the participants.

Upon receiving a computer and acquiring adequate email skills, the participants can also choose to subscribe to the CHIPs Discussion Group, a Listserv for the CHIPs members. It has since become an essential part of the CHIPs online community, providing a method of contact with others living under similar circumstances. And the CHIPs Listserv is not limited to persons who are clients of the program. Requests to join the Listserv sometimes arose from others in the community who are homebound and isolated, but already have their own computers and who were in need of community with others.

Pertinent issues such as health insurance and accessibility were brought to the attention of the Participants via the Listserv. This awareness has resulted in political action taken through emails, letters and phone calls to legislators. The potential for social change is limitless, as persons who were initially invisible in the community became agents of social change.

The last feature to develop was a chat feature, accessible to the participants from the CHIPs website. "CHIP chat" sessions first occurred on a regular basis at a specific time during the week. From that point, it evolved to the point that members were chatting with one another into the early morning hours. This was especially useful for those individuals unable to sleep due to pain or other reasons. Chat has been an especially important communication tool for one individual who has a severe speech impediment. He writes ".....since I have been a member of CHIPs, it has been better for me to communicate with all of my friends!"

Education and Employment Opportunities

Access to a computer and the Internet has also led to home-based employment opportunities, allowing the participants to supplement their incomes. Some participants from CHIPs have been selected to participate in a pilot project, involving an online distance education program where an individual can obtain credentials in the area of Internet Technology (IT). Once again, the implications for economic change here is significant for this group of individuals who are often on a fixed income and in need of supplemental income to meet their needs.

Design of Study

The initial questionnaire completed at the time of application was utilized as the baseline for level of communication and participant satisfaction with the amount of contact they had with others. In order to assess the impact of computer use and Internet connectivity, the same questionnaire was then resubmitted to and completed by all participants who had utilized the computer for approximately one year. The questionnaires were completed by mail, personal

interview, phone interview, or via the Internet. Pre and post-test scores were then computed to determine any significant changes in the levels reported on each of the questions.

Data Collection

The data collected included scores reported on a scale from 1 to 5 (See Table I). The questionnaire was designed first to assess the applicant's level of isolation and mobility in order to determine eligibility, and secondly to assess the impact of the CHIPs program on the individual's level of isolation approximately one year after working with their computer and the Internet. The questions therefore covered variables that would not be expected to change ("I am able to leave my house") to variables that could possibly change ("I am satisfied with the amount of contact I have with other people").

Table I, Sample Questionnaire

QUESTION	Not at all				Very Extensively
1. I am able to move around my house easily.	1	2	3	4	5
2. I am able to leave my house.	1	2	3	4	5
3. I communicate with a friend or family member.	1	2	3	4	5
4. I communicate with a community service or governmental agency.	1	2	3	4	5
5. I require assistance with activities of daily living and self care.	1	2	3	4	5
6. My knowledge of computers is:	1	2	3	4	5

7. I am interested in learning computer skills.	1	2	3	4	5
8. I use a computer to communicate with a friend or family member.	1	2	3	4	5
9. I use a computer to communicate with a community/government agency.	1	2	3	4	5
10. I am satisfied with the amount of contact that I have with other people.	1	2	3	4	5

Variables

On the 1-5 scale, numbers one and five had a descriptive value, whereas 2, 3 and 4 did not. Therefore, it is possible that there was some variation on the values that each participant placed on these scores.

Not all participants completed the questionnaire at exactly one year from the date their computer was installed. Although the times usually varied by 2 to 3 weeks, one individual's was completed 1 year and 3 months after the date of installation. This individual, however, did not learn computer skills during the additional time and so the results are not expected to have affected the results.

Although most participants completed the surveys by mail, some surveys were completed via email, or during a phone or home interview. We are uncertain as to whether the differing modes of completion affected the outcomes.

Finally, we are uncertain as to how much of the improvements were due to the mentor service. Although the results indicate that the improvements in communication were due to computer use after one year, participants also received assistance from mentors for varying amounts of times, depending upon need. Although the mentors were

often able to complete their training in three months, we have verbal reports that the teaching relationships of the mentors evolved into friendships, and these relationships may have affected the results.

Demographics:

Participant Profile

One of the progressively attractive elements of the CHIPs project was the outreach to persons with severe or numerous disabilities. Eight of the participants were over age 60, and some of these individuals also had disabilities. Two of the participants were caregivers, and one of the caregivers was also elderly with a significant disability.

The population of this study represented a wide range of disabilities: stroke, paralysis, diabetes, multiple sclerosis, thyroid disease, epilepsy, emphysema, osteoporosis, pancreatitis, cerebral palsy, mobility impairments, orthopedic impairments, cancer, acquired immune deficiency syndrome and depression.

Income was not a factor considered in the eligibility criteria, so 12 of the participants income was unreported. However, two of the participants reported incomes over \$1000 per month, and six reported monthly incomes of below \$900, many of whom were on some form of public assistance.

Technology

Of the twenty participants five did not require any type of assistive technology. Six of the participants had visual impairments requiring 17" or 19" monitors. Thirteen trackballs were provided in lieu of a regular mouse for participants with limited hand coordination or fine

motor skills. The trackballs and larger monitors, often accompanied with larger print lettering on the keyboard were the most often needed forms of assistive technology. Some individuals, however, *required more sophisticated forms of adaptive assistance* such as voice recognition software.

The computers that were installed varied from older model (486 processors) to relatively new Pentium I, II and III class computers. A Pentium class computer was always utilized for individuals requiring assistive technology, due to the requirement for higher memory and processing speed to run specialized software programs. Initially, as the program began as a grassroots volunteer program, all of the computers installed had 486 processors. At the time of the study, however, 14 of the 20 participants had utilized a Pentium-class system. It is important to note that two of the participants returned their computer to CHIPs after purchasing their own personal computer, thereby allowing the computers to be utilized by other persons who were homebound.

Community Resources

The mentoring service was an integral part of the CHIPs project, as most participants had no previous exposure to computer use. Four of the mentors were friends and seven were family members of the participant. Although many of the mentors for the overall project were volunteers from the community, only two volunteers worked with subjects in this study. Finally, the entire existence of the CHIPs project was *due entirely to a cooperative partnership between local and federal governments, private and non-profit agencies.*

Results

As a follow-up, the same survey was completed by each participant after having utilized the computer for approximately one year. In a paired t-test on each of the 10 questions, a significant difference was noted in 7 out of 10 of the questions. A significant increase was seen in all questions relating to the use of a computer to

communicate, level of communication and level of satisfaction in the amount of contact with others.

Table II, Paired t-test

QUESTION	DEGREES OF FREEDOM	MEAN X-Y	PAIRED t-VALUE	PROBABILITY 2-TAILED
1	19	-0.25	-0.815	0.4251
2	19	-0.5	-2.127	0.0467
3	18	-1.158	-4.925	0.0001
4	19	-0.85	-2.602	0.0175
5	19	-0.5	-1.486	0.1536
6	*15	-1.562	-6.484	0.0001
7	19	-0.45	-1.229	0.2341
8	19	-3.3	-13.653	0.0001
9	19	-1.4	-3.5	0.0024
10	19	-2.316	-6.6	0.0001

* 15 degrees of freedom due to incomplete data.

Discussion

The results from question #1 are not significant, but no change in mobility was expected. Question #2 is significant at the .05 level. Although physical mobility was not affected, it does appear that better communication via the computer led to the participant's ability or willingness to leave their house more often. This finding further supports reports by participants that their desire to meet others was increased. For example, one participant, who had not left her house in 6 months, felt compelled to attend the CHIPs gathering so that she could physically meet the participants with whom she had formed friendships.

Question #3 shows a significance in increased communication with friends or family. Similarly, question #4 shows significantly better communication reported with community service and governmental agencies. This finding may be of particular interest to the Department of Commerce, Technology Opportunities Program (TOP). In addition to their goal of decreasing the digital divide, TOP funded the CHIPs also to provide better access to governmental and community services for individuals who could not leave their homes. These preliminary results support the idea that the project did help

participants to more easily access those governmental and community resources.

No significant change in answers to question 5 is consistent with our expectation that the participants still require assistance for activities of daily living. This includes visits from home health workers and caregivers.

Some of the participants failed to answer question #6, possibly due to lack of clarity of the question, which was intended to measure their ability to use computers. For this question, the total number of subjects was decreased in the statistical analysis (see degrees of freedom for Question #6 under Results). Despite fewer subjects in the analysis, the results were significant, suggesting that the participants increased their knowledge of computers. This is a change that would be expected, especially with the assistance of mentors.

No significance was found in changes in answers to Question #7 regarding the client's interest in learning computer skills. This may indicate the participant's are satisfied with their level of computer skills after one year. This question was intended to measure level of motivation, an important factor that was considered by the CHIPs/TOP Review Committee when determining applicant eligibility. However, some individuals have consistently continued to build upon their computer skills and are motivated to continue to learn. We would have expected that more of the participants felt this way. Perhaps many of them have reached their level of competency and/or are satisfied with being able to email and surf the internet and do not see the need for additional uses of the internet.

Changed measured in Questions 8, 9, and 10, are all significant. We were expecting significant results in these areas that reflect the participants' use of computers for communication with friends, family, community and governmental service agencies. Here again, question #9 may be of particular interest to governmental or community service agencies desiring better contact with this population. Specifically relating to communication via computer, participants reported better contact with their home health agencies, increased self-sufficiency due to ordering prescriptions online, and

better access to information on disability benefits and other government-based programs.

Question 10 was perhaps the most important with respect to the intrinsic value. The participants interpreted the question to be related to their amount of social contact. The question was intentionally worded in a manner that would not seem invasive to the participants, *many of whom suffer from depression. We are assuming that a significant increase in personal satisfaction in the amount of contact with others results in a better overall sense of well-being.*

In sum, these results seem to verify that the participants utilized their computer skills to communicate more with others, that this communication led to increased social contact and that they are more satisfied with the amount of contact that they have with others. These results are certainly more than what would be expected randomly, and provide a good basis for a more formalized study.

Recommendations for Future Research

Further study would benefit from a control group that receives the *same weekly visits from mentors as the test subjects, but without computer installation and training.* In such a study, it would be useful also to measure longer-term improvements in outcome, such as a follow-up questionnaire six months or more following discontinuation of the mentoring service. If, as seems likely, positive changes were maintained longer by the computer group than the mentor-only group, this would lend greater strength to the conclusion that access to and knowledge of computers and the internet was the primary cause of many of the improvements reported by subjects of the study.

Some of the participants have also completed the Geriatric Depression Scale, prior to receiving a computer. This scale was later recommended by the CHIPs/TOP Review Committee as an

additional tool to measure changes in the emotional state of the participants, and therefore only administered to a portion of the subjects. Although the scale is somewhat more invasive, it more accurately captures the participants' level of depression. An analysis of the follow up surveys could be completed to identify changes in the results.

We would also recommend a larger number of subjects. Currently the CHIPs project is serving approximately 85 clients, but at the time of the study, only 20 members had utilized their computer for one year. A more comprehensive study was not possible.

Finally, computers, Internet connectivity and the assistive technology required by some for computer access can positively affect many differing populations. The CHIPs project was funded by a non-renewable grant and targeted to a specific population. There were many ineligible applicants who could have benefited as well, such as individuals in nursing homes, group homes, and housing projects. The implications for future service are wide-spread and can serve many populations in need. With the suggested results of this study, these projects would be quite worthy of pursuit.