CONNECTIONS:

Internet Access for Frail Older Seniors

to Improve their

Psychosocial Well-Being

Silvia M. Straka and Fiona Clark

The McGill Centre for Studies in Aging

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EXECUTIVE SUMMARY[1]

Frail older seniors, whether they live at home or in a residence, are at risk of being marginalized and socially excluded. Providing them with Internet access could help narrow the gap between these frail seniors and society, thereby enhancing their self-esteem and reducing their social isolation. In addition a computer program could promote mental health by providing mental stimulation and the opportunity to learn new information and skills.

Frail seniors at five Montreal institutions (three day centres and two residences) were given the opportunity to use computers and the Internet on a regular basis. This project, initiated and coordinated by the McGill Centre for Studies in Aging, was funded by Canada's Office of Learning Technologies (HRDC).

The goal of the study was to demonstrate the value of providing frail seniors with Internet access. Four research topics were explored in order to help other sites implement similar programs and to provide a rationale for such programs:

1. To examine the feasibility of providing the necessary resources, both human and technical.

2. To see what kinds of people participate.

3. To determine how much and for what purpose participants use the computer.

4. To examine what psychosocial benefits are experienced by the participants.

The study had a quasi-experimental design. Participants were interviewed before the beginning of the project and six months after they started. The SF-12® Health Survey was also administered on a pre-test and post-test basis. Other data collected included computer usage logs, questionnaires for volunteers and teachers and a focus group for the site-coordinators.

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[1] In addition to what has been reported here, a Report for Coordinators and a Computer Manual are also available.

The teaching program began with nine weeks of teaching by an experienced teacher. Following this, participants were helped by volunteers for the remainder of the six months. A computer manual was provided to each participant.

Eighty-four participants (26 males and 58 females) with a mean age of 85.5 took part in the study. Day centre participants were five years younger, but had lower physical health scores than participants at residences. Participants came from a variety of ethno-cultural backgrounds and life experiences. Most participants had some level of physical disability, especially in terms of vision, hand mobility and general mobility. Educational levels varied, from several who had grade 3 education to those with graduate degrees.

Although participants used a variety of programs, the most popular was e-mail, as reported by over three-quarters of the people interviewed. Apart from e-mail, computer usage depended on the participants' interests and ranged from surfing the Internet to using Word for a variety of personal projects to playing games.

Most participants experienced a variety of self-reported benefits. One of the most important was that after receiving some computer instruction, they reported that they now felt part of society again. Another key benefit was the strengthening of their social networks by e-mail. Other major benefits included a sense of mastery and achievement, the pleasure of gaining new knowledge and just learning how computers work. For many, it provided much needed mental stimulation and challenge, while for others, it was a way to fill a void in their lives. Almost all the participants reported multiple benefits in these categories.

Of the original cohort 81% completed the nine-week course, and after six months 53% were still planning to continue computer activities. The only predictive variable for persistence

was that of e-mail usage. Almost all those who reported a lot of e-mail use, and almost three-quarters of those who reported a little e-mail use were still in the program at 6 months.

The project was successful in different settings with a wide variety of individuals. The outcomes show that it is well worth the effort of implementing and maintaining such a program in terms of the benefits it provides to the participants, as well as to the institutions, the teachers and the volunteers.

RESUMÉ RÉDIGÉ

Connexions : Accès à Internet pour les aînés en perte de mobilité pour

améliorer le bien-être psychosocial

Qu'ils demeurent à la maison ou dans une résidence, les aînés en perte de mobilité risquent bien souvent de se retrouver isolés et exclus de la société. En leur donnant accès à Internet, on peut aider ces aînés à se rapprocher de la société, à rehausser leur estime de soi et à diminuer leur isolement social. De plus, un programme d'ordinateurs favorise la santé mentale en fournissant une stimulation intellectuelle et en donnant l'occasion d'acquérir des connaissances et des compétences nouvelles.

Des aînés en perte de mobilité de cinq établissements montréalais (trois centres de jour et deux résidences) ont eu la possibilité d'utiliser régulièrement l'ordinateur et Internet. Mis sur pied et coordonné par le Centre McGill d'études sur le vieillissement, ce projet a été subventionné par le Bureau des technologies d'apprentissage du Canada (DRHC).

L'étude avait pour but de démontrer l'utilité de fournir l'accès à Internet à des personnes âgées en perte de mobilité. Quatre sujets de recherche ont été étudiés dans le but d'aider d'autres centres à mettre sur pied des programmes similaires et de démontrer le bien-fondé de tels programmes :

1. Examiner la faisabilité d'offrir les ressources humaines et techniques nécessaires

2. Tracer un profil des participants

3. Déterminer dans quelle mesure et dans quel but les participants utilisent l'ordinateur

4. Examiner les bienfaits psychosociaux qu'en retirent les participants

L'étude était de type quasi-expérimental. Les participants ont passé une entrevue avant le début du projet et six mois plus tard. Le questionnaire de santé F12 a également été administré avant et après l'étude. Les autres données recueillies comprenaient les livrets d'utilisation des ordinateurs, les questionnaires destinés aux bénévoles et les données obtenues dans des groupes de discussion réunissant les coordonnateurs de centres.

Le programme a débuté avec neuf heures d'enseignement données par un professeur qualifié. Les participants ont reçu un guide d'utilisation et ils ont ensuite été encadrés par des bénévoles pendant les six mois du projet.

Au total, 84 personnes ont participé (26 hommes et 58 femmes) et l'âge moyen était de 85,5 ans. Les participants des centres de jour étaient de cinq ans plus jeunes, mais leurs cotes de santé physique étaient plus faibles que celles des participants vivant en résidence. Les participants étaient d'origines ethniques diverses et avaient différentes expériences de vie. La plupart des participants présentaient un certain degré d'incapacité physique, en particulier sur le plan de la vision, de la dextérité manuelle et de la mobilité générale. Le degré de scolarité était variable, allant de la troisième année dans plusieurs cas, jusqu'à un diplôme de grade supérieur.

Bien que les participants aient utilisé différentes programmes, l'activité la plus populaire était le courrier électronique, selon les trois quarts des personnes interrogées. Outre le courrier électronique, l'utilisation de l'ordinateur dépendait des intérêts de chaque participant et allait de la navigation sur le Net ou de jeux jusqu'à l'utilisation de Word pour divers projets personnels.

La majorité des participants ont affirmé avoir retiré des avantages de cette activité. L'un des plus importants est qu'après avoir reçu des instructions sur l'utilisation d'un ordinateur, ils se sentaient de nouveau intégrés à la société. Un avantage clé était le renforcement de leur réseau social grâce au courrier électronique. Les autres avantages comprenaient un sentiment de maîtrise et d'accomplissement ainsi que le plaisir d'acquérir de nouvelles connaissances ou tout simplement de savoir comment fonctionnent les ordinateurs. De nombreux participants ont indiqué que cette activité leur avait procuré une stimulation intellectuelle et un défi des plus appréciés, tandis que d'autres y ont trouvé une façon de combler un vide dans leur vie. Presque tous les participants ont signalé de multiples bienfaits dans ces différentes catégories.

De la cohorte initiale, 81 % des participants ont terminé les neuf semaines du cours et, après six mois, 53 % avaient l'intention de continuer d'utiliser l'ordinateur. La seule variable prédictive de la persévérance dans ce type d'activité a été l'utilisation du courrier électronique. Presque tous ceux qui ont dit se servir beaucoup du courriel et presque les trois quarts de ceux qui s'en servaient un peu participaient encore au programme après six mois.

Le projet a été une réussite dans différents cadres de réalisation et auprès d'une grande variété de personnes. Les résultats montrent que les efforts pour mettre sur pied et faire fonctionner un tel programme se justifient amplement si l'on considère les avantages qu'en retirent les participants, les établissements, les professeurs et les bénévoles.

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CHAPTER 1:

INTRODUCTION

Gerontologists have increasingly recognized the importance of the social aspects of aging over the past decade. One key area of inquiry has been how social support networks change with increasing age, and the effects of such changes on the physical and mental health of seniors. As people age, social networks have been found to decrease in size and the ability to maintain them also decreases (Chappell, 1992). This increasing social isolation for some seniors is associated with many adverse health outcomes, whereas satisfaction with social support networks has protective effects on both physical and mental health (McPherson, 1990).

Decreased social interaction is associated with physical changes as well as life-cycle changes, both of which can affect the social condition. At the physical level, many seniors in their advanced years experience disabilities (i.e., visual impairment, hearing loss, mobility limitations, chronic pain), which can make social interaction more difficult. Life-cycle changes, such as retirement, the death of peers, and the geographical distance from family and friends can also reduce the level of social contacts (Chappell, 1992). Many lose not only their friends, but also their children, who have moved away in pursuit of opportunities elsewhere (this is particularly so for older Quebec Anglophones).

This problem of social isolation is compounded for those older seniors who experience *both* physical disabilities and reduced social contacts due to life-cycle changes. These frail, at-

risk older seniors, especially those with mobility problems, have experienced a significant narrowing of their worlds. Unfortunately, most interventions aimed at enhancing social supports are time-consuming, labour intensive and difficult to deliver to frail or immobilized older seniors.

Present State of Knowledge

One innovative and effective way to increase social interactions for seniors would be through teaching them how to access the Internet. Grandparents could have daily contact with their grandchildren in other cities, while other seniors might enjoy making new friends through various interest groups on the Internet. Computers could be located wherever there are groups of vulnerable seniors, such as in nursing homes, residences and day programs.

Some recent research has looked at the ability of seniors to use computers and which factors facilitate or inhibit their ability to do so. Contrary to popular stereotypes, research has shown that seniors are able to learn the use of computers and enjoy doing so (Bourdelais, 1986; Czaja, Guerrier, Nair & Landauer, 1993; Fisher, 1986; Furlong, 1989; Lawhorn, Ennis & Lawhorn, 1996; Morris, 1994; Temple & Gavillet, 1990). Despite this evidence supporting the use of computers by seniors, other studies have examined limitations in the abilities of some seniors in this area (Kelley & Charness, 1995; Eilers, 1989; Hahm & Bikson, 1989). For example, Baldi (1997) found that older adults need approximately twice as long to learn as younger adults. Such limitations are not necessarily permanent obstacles, however. There is also a growing body of literature describing the most effective ways to adapt training approaches and equipment for seniors, especially those with disabilities (Charness & Kelley; Morris; O'Leary,

Mann & Perkash, 1991), and strategies are outlined to enable seniors to overcome the various obstacles to computer use (Czaja, Guerrier, Nair & Landauer; Fisher).

Computer use by seniors has been studied for diverse groups and with different kinds of applications. Numerous benefits have been documented, such as cognitive improvement and mental stimulation, enhanced self-esteem and sense of competence, improved life satisfaction and increased sense of independence and autonomy (Czaja, Guerrier, Nair & Landauer, 1993; Eilers, 1989; Lawhorn, Ennis & Lawhorn, 1996; McConatha, McConatha & Dermigny, 1994; Scherer, 1996). These studies included seniors of all ages and varying levels of wellness, in settings such as nursing homes, day centres and their own homes. Computers were used for such diverse purposes as playing games, using e-mail and accessing the Internet, as well as for occupational therapy, education and training. Where young volunteers were used to provide ongoing support, the intergenerational contact and learning was a positive element for both participants and volunteers (Hoot & Haslip, 1983; Kautzmann, 1990; White et al., 1999).

More recent research suggests that regular Internet and email access can have a positive effect on the quality of life and well-being of seniors, because of the ability of such computer use to provide a different kind of social interaction for seniors with limited mobility. Two studies in the U.S. explored the effects of computer use by seniors on psychosocial well-being. Both studies were conducted in age-segregated seniors' housing: a nursing home and a retirement community (McConatha, McConatha, Deaner & Dermigny, 1995; White et al., 1999). The McConatha et al. study found that the use of computers by institutionalized seniors through the Prodigy interactive service (a private service similar to the Internet) decreased depression and improved cognitive functioning in the experimental group. White et al.'s (Duke University) experimental study on the use of the Internet and email in a retirement community describes the

feasibility of such projects and provides suggestions for future projects of this nature. This study also showed a trend towards reduced loneliness. These early experiments are encouraging, and White et al. emphasize the need to repeat this experiment with a larger and more targeted sample for more conclusive results.

Other studies support the notion of e-mail and the Internet as a source of social support. Lawhorn, Ennis & Lawhorn (1996) suggest that e-mail and Internet use encourages socialization and the sharing of their experiences by seniors among their peer group. Two other studies that provided seniors with computer e-mail use in their own homes showed that this activity offered them a means for social interaction and mental stimulation (Czaja, Guerrier, Nair & Landauer, 1993; Hahm & Bikson, 1989). Similarly, Furlong (1989) studied whether communicating with others through SeniorNet, a computer network, could improve the lives of seniors, and found that it functioned as an effective emotional support system, especially for nursing home residents.

Goal of the Study

The goal of this study is to explore how providing frail older seniors with access to the Internet and e-mail can affect their psychosocial well-being. Seniors in three day centres and two seniors' residences were provided with Internet access to on-site computers for six months. Training and follow-up support was provided.

Research Objectives

This study includes both an implementation evaluation and an outcome evaluation. The first three research objectives relate to the implementation evaluation, which is intended to provide the necessary information to allow other sites to replicate such a program. The fourth

research objective relates to the outcome evaluation, which is intended to justify the rationale for

such a program in this study and for future sites.

1.   To examine the feasibility of providing the necessary resources, both human and technical.

2.   To see what kind of people participate.

3.   To determine how much and for what purpose participants use the computer.

4.   To examine what psychosocial benefits are experienced by the participants.

CHAPTER 2:

METHODOLOGY

Program Design

<u>**Study Sites**</u>

The opportunity to use computers and the Internet was offered to older seniors with limited autonomy, all of whom either attended a day centre or lived in a residence. Two computers were installed in each location and made available to participants on a regular basis.

Five study sites were selected. The three day centres provide preventative and therapeutic activities for older seniors who have lost some autonomy and who live at home. The main objective of the day centres is to maintain older seniors in the community with good quality of life for as long as possible. The two seniors' residences cater to three levels of residential living: independent, assisted and nursing care. These are all Anglophone institutions in Montreal, and the majority of their clients are English-speaking.

The program was offered at the following five Montreal locations:

<u>Day Centres</u>

Henri Bradet Day Centre of the Centre Hospitalier Richardson,

The Day Centre of the Jewish Nursing Home,

St. Margaret's Day Centre.

<u>Residences</u>

Griffith McConnell Residence,

Place Kensington.

Study Participants

When the computer program was introduced, an information meeting was held at each site. At the residences, the program was well publicized by the on-site coordinators by word of mouth, posters and newsletters, mainly to those who were more autonomous (rather than those needing more nursing care). Interested residents attended the information meeting. All were provided with an information sheet about the project (Appendix A).

At the day centres, clients are grouped according to cognitive ability and those in the highest functioning group (mini-mental score of >20) were informed of the opportunity. At two day centres, all interested clients attended, while at the third day centre the Site Coordinator invited those who she felt had appropriately high cognitive levels and good memory abilities.

Exclusion criteria were limited to cognitive or physical deficits that would preclude the use of a computer, mouse and keyboard and/or participation in the training program.

Altogether 84 people participated: 30% were men and 70% women, and they varied in age from 68 to 98 with a mean age of 85.5. Only just over half were born in Canada. They reflect the multicultural background of the west-end Montreal community, and include people with a broad spectrum of work and educational experience (see Table 1).

Ethical Review Process and Informed Consent

This study was approved by the Ethics Review Committee of the McGill University School of Social Work. Because of the frailty and poor health of many of the participants, great care was taken to clearly explain the study and provide adequate information for a fully informed consent process. The Principal Investigator carefully reviewed the consent form (Appendix B) with the group at each information meeting and answered all questions about the study or the

consent form. Those who expressed any hesitation were encouraged to take whatever time they needed to reflect on whether or not they wanted to participate in the study.

Procedure: The Program

Two computers and one printer were installed with Internet access at each of the five sites, in a secure location.

Each participant was given 9 hours of teaching by an experienced teacher. Participants were scheduled in pairs, one at each of two computers, for one hour at a regular time each week. They were shown the basics of *Word*, the Internet and e-mail. Participants had no chance to practice between lessons, making it important to spend time each week recapping and practicing basic skills. Following the first 9 weeks they continued at their assigned hour, with the help of a volunteer, for the remainder of the 6-month period.

A course outline (Appendix C) was provided for the teachers and a printed manual with detailed information and instructions was issued to each instructor and participant[2]. The computer manual had detailed instructions and many screen pictures and participants were encouraged to refer to it between lessons. The manual was also intended to be helpful to the volunteers, showing them what methods had been taught. It was always available for reference beside the computers.

Volunteer support staff were recruited at the beginning of the program. Before starting, they attended a training session on working with seniors and received a guide outlining their role and what is expected of them. Some were able to attend the initial training of the participants. With the volunteers, participants continued activities they had been doing with the teachers, and

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[2] The computer manual is available on request from the McGill Centre for Studies in Aging. It will soon be available for down-loading from their web-site (www.mcgill.ca/mcsa), as well as from the web-site of the Office of Learning Technologies, Human Resources Development Canada (http://olt-bta.hrdc-drhc.gc.ca).

pursued their own interests. The volunteers helped them decide how they would use their allocated time and also introduced them to new things.

Evaluation Design

A quasi-experimental design with no control group was used. Pre- and post- interviews were conducted using structured interview guides, collecting both quantitative and qualitative data.

- Participant Pre-Test (Straka, Clark, Duder, Yaffe & Stewart, 1999 – see Appendix D): Structured interview guide. The following questions may serve as possible predictors of outcomes as well as providing certain comparisons of expected outcomes with actual outcomes. Both quantitative and qualitative data were collected in the following areas:

    - participant demographics
    - motivation and expectations re computer use
    - previous computer/typewriter experience
    - anticipated limitations due to disabilities or other reasons
    - current and past activities, hobbies and interests
    - social supports
    - life satisfaction (Bradburn faces, open-ended questions)

- Participant Post-Test (Straka & Clark, 1999 – see Appendix E): Structured interview guide, asking about benefits from use and how actual used differed from expectations.

- The SF-12® Health Survey[3] (Ware & Davis, 1995; Ware, Kosinski & Keller, 1995): To assess general health and functional status for both mental health and physical health (pre- and post-test).

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[3] SF-12™ Health Survey, Copyright © 1992 Medical Outcomes Trust. All Rights Reserved. Used with permission of the Medical Outcomes Trust.

- Self-efficacy scale (adapted from Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982 – see Appendix F): Eight items were selected from Sherer et al.'s scale, which were further reduced to 4 items after pilot testing. This scale was included in the pre-test questionnaire (Appendix C). Items 3 and 4 were reversed for scoring. Likert scale numbers were summed and a mean was calculated for each participant.

- Locus of control scale (adapted from Reid & Ziegler, 1981 – see Appendix F): Eight items were selected from Sherer et al.'s scale, which were further reduced to 4 items after pilot testing. This scale was included in the pre-test questionnaire (Appendix D). Item 1 was reversed for scoring. Likert scale numbers were summed and a mean was calculated for each participant.

- Computer usage logs (see Appendix G): participants/volunteers

- Pre-project questionnaire for site coordinators (Appendix H): to collect statistics about the site and the participants.

- Focus group of site coordinators (for focus group questions see Appendix I)

- Volunteers questionnaire (see Appendix J)

- Telephone interview with teachers (see Appendix K)

The SF-12® is a shorter version of the SF-36®, which has been documented in more than 1,000 publications and which provides summary measures of health-related quality of life. The SF-12® has been shown to yield summary physical & mental health outcome scores that are interchangeable with those from the SF-36® in both general & specific populations. It is a widely used instrument.

CHAPTER 3:

FINDINGS: PROGRAM IMPLEMENTATION

This chapter reports on the results of objective 1, which is to explore the feasibility of providing Internet access to frail seniors in terms of material and human resources. Actual costs from the project are also reported, as a guideline to other sites, although it is important to note that such costs are constantly changing.

Material Resources

<u>Location</u>

Computers must be located in a space with adequate power outlets and a telephone line, which is also well-lit and has a pleasant ambience. All our sites had no such empty space available, but each was able to come up with its own solution, by adapting an existing space and/or sharing space with others. The locations that proved the most successful were those that used quiet rooms separate from other activities, but where they were near enough to other activity areas that the participants and volunteers did not feel isolated.

<u>Hardware, Software and Internet Service</u>

There were two computers sharing one printer at each site. It proved to be impossible to get funding for the purchase of equipment. A donation of 485 computers (8 MB of RAM and without monitors or CD Roms) was received, but the cost of the necessary upgrading and purchasing monitors was prohibitive. Instead, the McGill Centre for Studies in Aging had to cover the cost of purchasing more up-to-date computers fully equipped with monitors and CD-

Roms. They were able to get a good price from the supplier by purchasing out-dated inventory. Each site provided its own computers tables, extension cords and printers.

Apart from the *Windows 95* and *Microsoft Office* that came with the computer package, only a few other programs were acquired. *MacAfee* antivirus software and Y2K upgrades were purchased. Popular CDs were purchased: an Encyclopedia, Clip Art, crosswords and a selection of games. *RealPlayer* was installed in order to listen to radio and audio files from the Internet.

It was also impossible to get funding for Internet service or telephone connections. To keep costs down, only one telephone line was used at each site. The cost of installing and paying the monthly charges for a second line was prohibitive. This meant that at any one time only one computer could be using the Internet (which was provided free of charge by McGill University). Networking the two computers locally to share the line more efficiently was considered, but this would have been even more expensive, requiring the purchase of additional equipment (an ISDN router) and a more expensive ISDN Internet service.

In order for each participant to have their own e-mail address they used the *Microsoft Hotmail* on-line E-mail service, which worked very well. The biggest disadvantage of using *Hotmail* was that participants had to spend longer on-line, making the half-hour Internet time seem very inadequate.

Special adaptations

Almost all participants had diminished visual acuity. Every effort was made to make the screen as clear as possible, to avoid eye-strain. The pointer, icons, tool bars, menus and scroll bar were all made larger, and a plain colour was chosen for the desktop. No screen saver was used, as this was confusing to many participants. The number of icons on the desktop was kept to

a minimum. In addition, a set of large letters for each keyboard was purchased from the Montreal Association for the Blind.

The Internet displays were most tiring on the eyes because they are so complex, with toolbars, advertisements, multiple headings and images. Using *Microsoft Explorer* it was possible to select a larger font size, but then more scrolling is needed and in *Hotmail* messages the lines of text often run off the screen. Our choice of *www.canoe.com* as home page was partly because of the clear bold print and headlines.

Several participants were severely visually impaired. Four participants withdrew because they found their vision too poor to continue. At Place Kensington two residents were able to try out some special software provided by the Montreal Association for the Blind called *ZoomExtra.* This software enlarges the entire display, showing one part at a time; the mouse is used to move from one area of the display to another. The users found it confusing and preferred to write in *Word* using a very large font size. Intensive training, more than was possible with this project, would be needed to take advantage of *ZoomExtra*.

The first skill everyone had to master was controlling the mouse. People in any age group take a while to master this, but arthritic fingers make it harder to differentiate between fingers on the left and right mouse keys and the double click is particularly hard. We changed the mouse setting so that programs opened with a single instead of a double click, and this made it much easier for everyone. Also "dragging" was difficult for participants to control, so we decided to show this method as little as possible, opting for alternative keystroke methods. With these adjustments, in time everyone was able to master the mouse for "pointing and clicking", except for one or two with severe hand disabilities. An early attempt to teach an alternative

method using key combinations (e.g. the <ALT> key combinations for menus) was abandoned; it required two hands and more things to remember, so participants preferred the mouse.

The only other adaptation that was made was for a participant who could not type with either hand. The teacher constructed an adapter connected to the cursor control keys, which she used with her fist to control the pointer, and to write text she pressed keys with the eraser on the end of a pencil.

Human Resources

Staff Commitment

At each site the Site Coordinator (one of the Activities staff) took responsibility for local coordination of the computer program. Initially, this involved recruiting participants and telling them about the program, as well as arranging for space and computer tables to be made available. Once the program started, the Site Coordinator made the participant schedule, scheduling replacements when a participant was absent. This could be quite time-consuming in the residences. They also had to maintain supplies such as printer paper and computer manuals.

It was a great advantage to have a Site Coordinator who was computer literate, fix minor computer problems as they arose, as well as being able to judge when the problem needed to be referred to a technician. In the *Connections* project, most, though not all, of these problems occurred at time of installation, and they were generally dealt with by the Project Coordinator. There was also a need for someone to keep the virus protection software up-to-date by downloading from the Internet.

At two of the sites, one residence and one day centre, the Site Coordinator actually took one of the scheduled time periods and worked with the participants.   This is highly

recommended, as the Site Coordinator then understands first hand the learning experience of the participants and is also very familiar with how the computers and Internet are functioning. Unfortunately at the other three sites the Site Coordinators' schedules were too busy to be able to incorporate a computer session.

At several sites the staff person taking on the computer responsibility was able to spend time improving their computer skills in order to take on the project. They considered this a benefit and welcomed the opportunity.

Finally there was a need for the Site Coordinator to make time for communication with the teachers and volunteers. It proved to be very important to orient new volunteers and keep in touch with how they are doing. They may have concerns and valuable observations to share. They also need to be informed of schedule changes.

Volunteers

The volunteers proved to be an essential part of the computer program. Without them the regularly scheduled computer sessions would be cancelled. A few participants at the residences were able to use the computers on their own, but the majority relied on the volunteers to remind them about procedures, even when they were doing things they had done many times before. The volunteers also introduced them to new things on the computer and helped them decide how they would use their allocated time.

The *Connections* volunteers varied considerably in age and interests. There were students with time available in the summer or between classes, new immigrants looking for an opportunity to practice job-related skills, and others not working because they were retired or looking after young children. At one residence weekend hours were scheduled and the volunteers had full-time jobs. What all the volunteers had in common was a strong desire to help others.

When asked what was most rewarding about their experience, about half the volunteers reported the satisfaction of seeing the participants' pleasure and excitement and watching them progress. One put it this way: "to see that special interest in their eyes or smiles, as if they achieved a landing on the moon". For the other volunteers their primary satisfaction was getting to know the people with whom they worked. By scheduling the volunteers on the same regular basis as the participants, they generally met the same people each week, enabling them to build relationships appreciated by both parties.

We were able to recruit some wonderful, committed volunteers, but getting enough people who could commit for the long term was difficult. Many volunteers were seeking employment and were no longer available when they found work. Students stopped volunteering when classes resumed or their school schedule changed. Those that stayed the longest were those who had flexible hours, because they were either self-employed or retired. Several volunteers already had a commitment to the institution through previous volunteer work and they proved to be among those who continued the longest.

Early in the *Connections* project a request for volunteers was listed with the Montreal Volunteer Bureau. This was an excellent source of volunteers. Later a campaign was organized, sending releases to newspapers, and posters to colleges, universities and seniors organizations. Also letters were sent to coordinators of various college Applied Social Service programs, asking if students could use this as work experience for their program. No-one did volunteer as work experience for their program, but the posters and media releases were successful, bringing in a number of volunteers. Most volunteers were dependent on public transportation, making it more difficult to recruit for the sites with locations furthest from the *Metro*.

A set of volunteer instructions was developed for each site and is issued to new volunteers. The manual describes what is expected of them, offers tips on dealing with participants, and provides important logistics about the site where they are volunteering and how and when to get in touch with the Site Coordinator.

At most of the sites there is an overall volunteer coordinator for the institution and so computer project volunteers were officially registered and signed in for the hours they volunteered. This way they were eligible for various volunteer recognition programs.

Direct Costs

Based on the *Connections experience* the direct costs of introducing a computer program are mainly the cost of the equipment and network services. The following were approximate costs per site for a 12 month period:

2 computer packages @ $750.00	$1,500.00
2 computer desks @ $100.00	200.00
Printer and switch	350.00
Telephone installation	250.00
Telephone service	220.00
Network service	200.00
Supplies: paper, printing	50.00
CD's, diskettes	60.00
TOTAL	$2,830.00

The above does not include teaching and computer service expenses, or indirect costs such as staff time. Some sites did not incur all the costs listed; for example, in some cases the telephone line already existed, and in others the printer was donated.

In order to give the reader a realistic estimate of the costs likely to be incurred for a similar program elsewhere, the cost of the network service is included even though for our project McGill provided it free. Ideally, as mentioned earlier, it should be possible to have both computers on-line at the same time. This would double the cost of the telephones and Internet service: an additional $670.00.

Teachers were hired for the Connections project at $20 per hour. Since participants were paired and given 9 hours with a paid teacher, the cost per participant was $90. It would be possible to have all the teaching done entirely by volunteers, although a few new participants joined in the *Connections* program this way after the project was well underway (they are not part of the research cohort). However, for the initial teaching sessions it would be preferable to use only experienced people, who have a clear understanding of the clientele, their goals and expectations.

CHAPTER 4:

FINDINGS: PARTICIPANT PROFILE

Summary

Table 1 shows a profile of participants by site.

<u>Table 1: Participant Profile by Type of Site</u>

	TOTAL (5 SITES)		DAY CENTRES (3 SITES)		RESIDENCES (2 SITES)	
	n=84	**%**	**n=32**	**%**	**n=52**	**%**
Gender: Males	26	31.0	16	50.0	10	19.2
Females	58	69.0	16	50.0	42	80.8
Mean Age[1] (years)	85.5		82.3		87.5	
First Language[2]:						
English	52	63.4	14	43.8	38	76.0
French	8	9.8	4	12.5	4	8.0
Yiddish	7	8.5	5	15.6	2	4.0
German	6	7.3	4	12.5	2	4.0
Other	9	11.0	5	15.6	4	8.0
Missing	2	--	--	--	2	--
Education:						
Primary School	17	20.2	10	31.3	7	13.5
Secondary School	34	40.5	10	31.3	24	46.2
College/Other	13	15.5	3	9.4	10	19.2
University: Bachelor	9	10.7	6	18.8	3	5.8
University: Masters	9	10.7	1	3.1	8	15.4
University: Ph.D.	2	2.4	2	6.3	--	--
Previous Occupation:						
Executive/Professional/Management	48	57.9	17	53.1	31	60.7
Clerical/secretarial	15	18.1	6	18.8	9	17.6
Blue collar	6	7.2	4	12.5	2	4.0
Homemaker	12	14.5	5	15.6	7	13.7
Other	2	2.4	--	--	2	3.9
Missing	1	--	--	--	1	--

[1] $t(43.7) = -3.46$, $p = .001$, unequal variances.

[2] There is a significant difference by type of site between those whose first language is English or French and those whose first language is Other (χ^2 (1, N = 82) = 7.65, p < .01).

Prospective participants attended information meetings promoted at each site. The level of interest varied. Most of those that attended the meeting decided to participate. Most of those who chose not to participate were concerned about a health problem such as poor vision, hearing loss or osteoporosis. Some did not have the confidence because of depression, concerns about short-term memory or fear that they were just too old to learn. Of those who expressed an interest at the information meetings, 6 never started: 2 died before the start, 2 had too low a literacy level, 1 was ambivalent and for 1 the reason is unknown.

The study began by interviewing 84 participants. At the end of the 6-month study, 69 participants were interviewed for the post test. Of the 84 participants who started, 15 were not available for interviews for the following reasons:

- 5 were ill at post-test time and not attending the day centres for a longer period of time, but were expected to return
- 2 died
- 2 were in the hospital, but expected to return
- 2 were no longer at the institution because of declining health
- 1 was absent on a long trip
- 1 refused
- 2 had scheduling difficulties

Of the 84 people who participated, approximately one third were men and just over two thirds were women. Participants varied in age from 68 to 98, with a mean age of 85.5 (median age of 86.0). Approximately two thirds of the participants lived in residences. Of those who lived at home, almost half lived on their own.

Only 55 participants (65%) were born in Canada, which reflects the multicultural background of the west-end Montreal community. Adding to this diversity, participants had a broad spectrum of work and educational experience.

Differences in Participant Profiles by Type of Site and by Site

Those at the day centres were more likely to be immigrants from non-English speaking countries than those at the residences, almost half having a first language other than English or French, compared to very few at the residences. The Griffith-McConnell Residence had the highest number of native English-speaking participants, with only one participant having a first language other than English. The Jewish Nursing Home Day Centre had the highest number of immigrants – out of 9 participants, only one claimed English and one French as their first languages (χ^2 (4, N = 82) = 16.38, p < .01).

There were no significant differences in educational levels or previous occupations between day centres and residences in total. However, out of the 17 participants who had not completed primary school, 9 were at the Jewish Nursing Home Day Centre and the Henri Bradet Day Centre, representing almost half the participants (44.4% and 50.0%) at those two sites (at the other three sites, the proportion of participants with less than a primary school education were 7.7%, 8.6% and 23.5%). None of the residents at these two sites had graduate university degrees.

Table 2 shows the SF-12® Health Scores at the beginning of the study. Day center participants had lower physical health scores than those living in residences. However, participants at day centres were younger than at the residences, who were older, but healthier (see Table 1, Figure 1). There were no differences in mental health scores between day centres and residences. The participants in the day centres were thus more physically frail than those at the residences.

Table 2: SF-12® Scores by Type of Site

	TOTAL (5 SITES) N=84			DAY CENTRES (3 SITES) N=32			RESIDENCES (2 SITES)		
	Mean	n	SD	Mean	n	SD	Mean	n	SD
SF-12® Health Scores:									
Physical Health Scores[1]	35.19	43	6.97	32.88	24	8.41	36.99	44	6.85
Mental Health Scores[2]	52.93	43	7.57	50.04	24	12.13	51.20	44	7.51

[1] $t(66) = -2.18$, p=.03, equal variances.
[2] No significant difference.
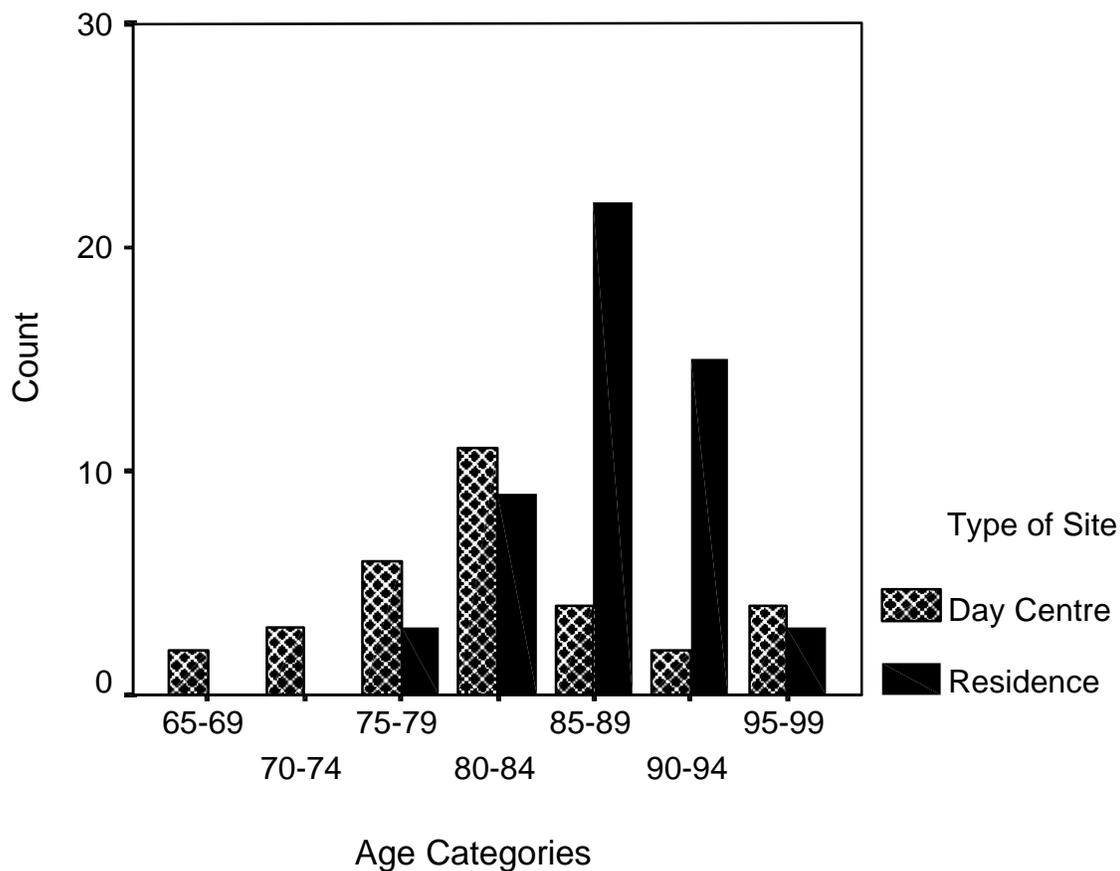
Figure 1: Participant Age by Type of Site

Participant Gender Differences

The day centres had an equal distribution of men and women, whereas the residences had

far more women than men in the program (see Table 1).

Table 3 shows the gender-related differences in the participant profiles.

Table 3: Participant Gender Differences

	MALES		FEMALES	
	n=26	%	n=58	%
First Language[1]:				
English or French	14	53.8	46	82.1
Other	12	46.2	10	17.9
Missing	--	--	2	--
Occupation[2]:				
Executive/Professional/Management	19	73.1	29	50.9
Clerical/secretarial	1	3.8	14	24.6
Blue collar	4	15.4	2	3.5
Homemaker	--	--	12	21.1
Other	2	7.7		
Missing	--	--	1	--
Day Centres: Living Configuration:				
Living Alone[3]	4	26.7	9	60.0
Living With Someone[3]	11	73.3	6	40.0
Living With Spouse[4]	10	90.9	1	16.7
Living With Other[4] (i.e. children)	1	9.1	5	83.3

[1] χ^2 (1, n = 82) = 7.24, p < .01.
[2] Cell counts are too low to run Chi-squares.
[3] χ^2 (1, n = 30) = 3.39, p = .065.
[4] Fisher's Exact Test, p < .01.

While most of the women reported English or French as their native language, only

slightly more than half the men did, suggesting a higher portion of immigrants. As would be

expected for this age group, there were significant gender differences related to previous occupations of the men and the women. Of the women, some had been homemakers, while none of the men had been. The men were more strongly represented in the executive/professional/managerial category than the women. At the same time, those who had been in clerical/secretarial occupations had been almost exclusively women.

Almost all the day centre participants lived in homes in their communities. Of the day centre participants living alone at home, just over a quarter of the men lived alone, while over half the women did. Ten of the 11 men living with someone were living with a spouse, which was only true of one of the women. The other women were living with their adult children, 3 with daughters and 2 with sons.

CHAPTER 5:

FINDINGS: COMPUTER USAGE

Teaching and learning

The teachers were able to give everyone an opportunity to use the three main applications; writing in *Word*, visiting sites on the Web and sending E-mail, but the exact topics taught varied with each participant. In most cases they did not cover everything in the planned course outline. This was mainly because of limited time. Participants had no chance to practice between lessons, making it important to spend time each week recapping and practising basic skills. They did have the computer instruction manual to refer to between lessons and 45% of participants reported using it.

Progress varied widely from one person to another. Some participants found learning the computer easier than they anticipated but others were frustrated that they were not mastering the computer as quickly as they had expected. The majority relied on volunteers to remind them about procedures, even when they were doing things they had done many times before, and will probably always want someone at hand to help them.

After 6 months, 65% of those continuing said they still needed at least a little help logging in and out of E-mail, while 24% required help even at the basic level of turning the computer on and off.

Early in the project it became clear that many participants would not be able to operate on their own, however it was essential to let them do all the keystrokes and use the mouse themselves. This level of independence was very important to them. Stepping in and doing this for them took away their feeling of achievement and self-esteem, and many stressed this in their interviews.

Cognitive and memory deficits were an ongoing concern for both participants and teachers. This theme was present throughout almost all aspects of the project. Teachers noted that they needed to start afresh each week for many of their students. The participants themselves were very aware of this problem and frustrated by it. Having only one one-hour lesson per week added to this problem, and was mentioned again and again by both participants and teachers. Some of the comments made by participants were:

> *The problem was not in the teaching, but in the lapse of time between one lesson and the next.*

> *The method was the best under the circumstances, but the allotted time wasn't adequate. And then one forgot between lessons.*

> *I couldn't retain it from one week to the next because there wasn't enough time.*

This problem of only having one hour a week of instruction was aggravated by other factors, such as: volunteers not showing up (which meant the participants were unable to use the computer that week), missed lessons due to illness or for other reasons, changes in bus schedules (which reduced one participant's time from one hour to 15 minutes) and other scheduling changes.

One of the most experienced teachers stated that if there could be more frequent sessions, i.e., 9 sessions in three weeks, they would retain the information better. At one residence they advertised the opportunity for an extra 6-hour course of paid teaching, scheduled over a two-week period, but residents were not willing to pay the required fee.

Having only one hour a week resulted in other limitations in addition to those of memory and forgetting. Many participants do everything more slowly than younger people, limiting what can be accomplished in one hour. One man would have liked to play bridge on the Internet, but this would have required two or three hours a week that were not available. Another person

found that there was no point in using a medium like e-mail, when one could only access it once a week. She said, "It doesn't make sense" if a message is received on a Sunday, but she cannot access her account until Friday. She would rather use the telephone.

Although they were in the minority, many participants could operate independently. In post-interviews, 35% of the continuing participants said they could log in and out of their e-mail without any help, while 15% were confident they could open and save files by themselves. At the residences, a number of participants used the project computers on their own in between scheduled sessions. In order to have more frequent Internet access, at the time of the post-interviews nine participants had bought or were planning to buy their own computers to use at home or in their residence room. Since several found it difficult to manage their own computer, this was not encouraged by project staff. Most had help from their families in getting their systems established.

A low level of English literacy among some participants was a factor that had not been anticipated. Although everyone had a good understanding of spoken and written English, some people had difficulty writing in English. There were English-speaking people with limited education, and immigrants, many of whom had not had much opportunity to write in English and had difficulty with spelling. On the one hand this made entering text very slow, but on the other hand, with the help of a volunteer and the "spell-check", they proudly created good written documents, something they had never been able to do before.

How Participants Used the Computer

Table 4 shows participants' computer usage by application as recorded on their computer logs.

Table 5 shows how well they liked the different applications, based on the post-test interview.

Table 4: Computer usage by application (computer logs)

	Total Participants (n=77)				
	Mean Hours	**SD**	**%**	**Min**	**Max**
Hours of computer usage	16.2	11.17	100.0	1.0	63.3
Application:					
E-mail	4.8	5.89	22.1	0.0	26.5
Word	5.0	4.74	31.9	3.3	21.2
Games	3.1	3.04	19.9	0.0	20.0
Internet	2.4	3.00	16.0	0.0	18.8
Other	.9	.95	10.1	0.0	4.3

Table 5: Computer usage :
How They Liked the Applications (self-report, quantitative question)

	How they liked it?			
	n	**A lot**	**It was o.k.**	**Didn't like it**
E-mail	40	29	10	1
Letters	8	3	5	--
Other word processing	10	7	3	--
Surfed Internet	20	14	5	1
Games	43	20	18	5

Table 6: Computer usage:
Favourite Applications (self-report, qualitative comments)

	Total		Day Centres		Residences	
	n	%	n	%	n	%
E-Mail	28	57.1	8	72.7	20	87.0
Internet	9	18.4	2	18.2	7	30.4
Games	7	14.3	2	18.2	5	21.7

Note: These are responses to the open-ended question: *What was your favourite thing about using the computer?* Some participants mentioned the use of certain applications, which comments were counted and reported here, whereas others mentioned other things reported in the next chapter. Some respondents reported more than one comment, so that percentages do not add up to 100.

Because there were two participants at a time, with only one Internet line, each participant could only work on-line with E-mail or surf the Net for half of their allotted hour. In most cases, participants would have liked an entire hour on-line. They used their half hour off-line to either draft their E-mails in *Word*, or used the time to play games.

The most popular activity was E-mail. Participants spent most of their time on E-mail and Word (most of which was spent drafting E-mails). In interviews, over three-quarters of the respondents especially volunteered that they enjoyed the use of E-mail (compared to approximately one-quarter who mentioned surfing the Net and another quarter who mentioned games). The quantitative data supports the qualitative results.

Participants wrote to friends and relatives (grandchildren, children, nephews and nieces and others) some close by in Montreal and others as far away as India and Denmark. In many cases this new way of communicating enabled them to make regular contact with a loved one. For many their first priority in their computer session was to see if they had received any E-mail.

One participant, Mrs. A., said that her most favourite thing about the computer was "being able to get in touch with my family and friends on the computer and to make new friends." She was able to keep in touch with her daughter in India by e-mail, as she lived in an area where telephone connections were tenuous and mail took weeks. When her daughter became ill with a relapse of cancer, Mrs. A. was able to hear the news immediately via e-mail and to communicate easily with her regarding arrangements for her return and for medical care. Mrs. A. also told me about how she met someone in Quebec City on a summer outing and they exchanged e-mail addresses. The two women have been communicating ever since by e-mail in both English and French, which has challenged her to improve her French language skills. Also, Mrs. A., who is on the Residents' council at her Residence, got to know Miss B. at the other Residence via e-mail, and the two women began to share on residents' issues through e-mail, finally arranging to meet in person. This is one example of how the use of e-mail has expanded participants' social networks and provided many other benefits.

Mrs. C. was thrilled to get up-to-date coloured photos of her grandchildren in the U.K. through her e-mail. Mrs. D. said that learning how to e-mail her daughter was the most exciting thing she has ever done. And Mrs. E. excitedly reported: "I really, really enjoyed it. Especially my son kept sending me e-mail letters. I had about 17 people who sent me e-mail letters!"

On the Internet, aside from sending E-mail, the most popular thing was reading the news. The home page was a Canadian news site (www.canoe.com). They appreciated seeing the headlines, generally more up-to-date than the morning newspaper. Many participants were immigrants many years ago, and liked to read the newspaper of their country of origin. Other sites that were popular were those related to health issues or those with information about a

relative. Some people liked to check the stock market, while others liked cyber-shopping. Sending electronic greeting cards was also popular.

There were some participants who took the opportunity to use *Word* to write recollections: memories of their arrival in Canada, a special vacation or other stories of interest to their family. For example, Mr. X. started learning the keyboard by writing about his career as a tenor soloist at the Vienna Opera. He then went on to recount how after the war he established a new life in Canada. With the encouragement of his family, and working with a volunteer who helped him with the written English, this led to his memoirs becoming an ongoing project.

Others enjoyed copy-typing poetry, jokes or quotations. A few undertook projects for the Day Centre such as typing up songs, articles for the newsletter or recipes for the cooking classes. Others wrote letters that they printed and sent by regular mail.

Some participants loved the games. *Solitaire*, which was introduced for mouse practice, became very popular. *Wheel of Fortune* and *Bridge* were also popular. Others used the games at the beginning for better mouse control.

Of the 42 participants interviewed who are still using the computers, 11 (26%) made a point of indicating that they still have learning goals. Some want to learn new applications, such as the Internet, others want to become more proficient at what they already know

Persistence

All participants who completed the first nine lessons were awarded a certificate. These were presented at ceremonies at each site. The recognition was appreciated and contributed to participants' feelings of accomplishment. The events were also an opportunity to thank the teachers and volunteers for their efforts. The certificates were decided upon part-way through the program, not only to acknowledge the achievements of the participants, but also as a way to help

them make the transition between the first nine weeks of instruction and the remainder of the six months. We used the ceremony to encourage participants to continue using the computers, however, we were unable to measure whether or not the ceremony had the desired effect.

Table 7 shows how many participants chose to enter the computer program out of all the potential participants at the site, who were either all the day centre attendees or all the residents at a residence who fit the inclusion criteria. The key points of measurement were: a) those who completed the nine weeks of teaching, b) those who completed the six months of the study, and c) those who were planning to continue past the end of the study (after six months).

Table 7: Participant Persistence by Site

	Total Participants		Day Centres			Residences	
			Henri Bradet	Jewish N.H.	St. Margaret's	Griffith McConnell	Place Kensington
	n	%	n	n	n	n	n
Total site population	364		38	59	18	84	165
Began the program	84	100.0	10	9	13	17	35
Completed 9 weeks	68	81.0	9	8	11	11	29
Continuing at 6 months	47	56.0	7	7	5	5	23
Planning to continue after 6 mths.	45	53.6	7	6	5	4	23
% Continuing at 6 mths		54%	70%	67%	38%	29%	66%

Participants gave a variety of reasons for stopping their participation when they did (see Table 8). Many said that ill health was a factor. Others left because of poor vision. Some didn't like computers. However, leaving the program at the end of 9 weeks was not necessarily a negative outcome. Many felt they had accomplished what they wanted by learning about computers, and didn't really have a practical purpose for continuing beyond that point. Most of those who did continue had correspondents to E-mail regularly.

Table 8: Reasons for Leaving by Site

Reason for Leaving	Total		Day Centres	Residences
	n	**%**	**n**	**n**
Total respondents	29		5	24
Health reasons	9	31.0	2	7
Visual disability	4	13.8		4
Goal achieved at end of 9 weeks/no reason to continue	11	37.9	2	9
Too difficult/memory	4	13.8		4
Tried it and didn't like computers	3	10.3	1	2
Other	11	37.9	1	9

Note: Some participants gave more than one reason for leaving.

The highest rates of leaving were at St. Margaret's Day Centre and at the Griffith-McConnell Residence. Although the differences were not statistically significant results, the Griffith-McConnell Residence and St. Margaret's Day Centre had higher rates of leaving than the other three sites. A number of factors seem to have caused the very high rates of leaving at these two sites.

At St. Margaret's, out of the 8 people who quit, 4 did so because of serious deterioration in health that caused them no longer to be at the Day Centre (one died, others were in hospital or rehab). Also, this was a new day centre without an existing volunteer base, which made it somewhat more challenging to find and retain good volunteers. Furthermore, the timing was such that during St. Margaret's 6-month project period there were many absences due to holidays as well as a one-week shutdown due to a flu epidemic. All these factors will have affected the St. Margaret's persistence rates.

The reasons for the high rates of leaving at the Griffith-McConnell Residence are different. Eleven participants in the entire study made comments that they were frustrated and/or disappointed that they did not meet their own expectations about how quickly and well they would learn the computers. An example of such comments is:

> *"I felt disappointed that I couldn't grasp it more easily. It was more frustrating than anything. I didn't feel I was making progress."*

> *"I am not very competent. I had hoped that I would be more competent."*

It is only at the Griffith-McConnell Residence that such comments are associated with high levels of leaving. (It was the impression of the researcher, supported by the qualitative comments, that this was one of the key reasons for leaving the program at this site, but not at other sites).

Physical disabilities were less of a reason for leaving than we had anticipated. At the pre-test, participants were asked about whether they had any concerns regarding physical or other limitations that might hinder their participation. The following concerns were expressed by 33 respondents (some expressed more than one concern):

- vision disability   14
- hand disability   8
- cognitive/memory deficits   8
- education/English language   6
- too old   2

When 25 of the above 33 respondents were interviewed again after six months, the following self-evaluations were recorded about their original concern:

- Not a problem   11
- Somewhat of a problem   7
- A large problem   3
- Insurmountable problem,
  had to quit   4

The three respondents who said it was a large problem nonetheless were able to stay in the program, all of them were still continuing at 6 months. The four who had to quit because their original concern had proven to be an insurmountable problem all had a severe visual disability. However, it must be noted that while visual disabilities were the only ones that caused people to quit, it was only 4 out of the 14 who were concerned about their vision who found it an insurmountable problem. Three respondents specifically noted in the post-test that the visual adaptations made had been very helpful.

There was no single variable associated with persistence in the program, other than having correspondents with whom to e-mail. The following variables were tested as predicator variables, with no significant relationships found:

- age or gender
- occupation, educational levels or mother tongue
- physical and mental health scores
- previous computer experience
- most important expectation at pre-test time
- favourite activity
- whether learning the computer was easier or harder than expected
- locus of control and self-efficacy scores

Of those who were still using the computer at the end of the study, 9 participants volunteered that they had bought a computer or received one from their children as a result of their participation in the computer program. We actually mildly discouraged the purchase of computers by participants unless they had a means of support at home (or in the residence) (i.e., children, grandchildren). Most of the 9 who received computers were using them successfully, however, one nursing home resident (age 98 years) had bought a new computer that was sitting unused in her room, because she was unable even to turn it on by herself. Nonetheless, the fact that 9 participants obtained their own computers speaks to their motivation and their enjoyment of computers.

CHAPTER 6:

PARTICIPANT BENEFITS

Summary

An analysis of all the data from various sources yields six major categories of participant benefits:

1.   Greater sense of social inclusion

2.   Strengthening of social networks by E-mail

3.   Sense of mastery and increased self-esteem

4.   Mental stimulation and challenge

5.   Filling a void

6.   Learning and acquiring of new knowledge.

Greater sense of social inclusion

Both at the pre-test and the post-test interviews, participants again and again expressed their frustration at their ignorance about computers, which are all around them in a world which seems to have passed them by. Over and over they used words like "ignorant" and "stupid" to describe how they feel when computers are mentioned in the media or when they cannot understand what their young grandchildren are doing or talking about. Several mentioned at the beginning that they would like to understand what is meant by the "www-dot" that everyone is talking about. They also felt that there were large parts of their children's and grandchildren's lives that they could not share in. Almost half the respondents interviewed at the post-test made comments like the following:

It has enlightened me. I feel happy that I'm not embarrassed when I see young people handling the computer.

I look forward to coming every week to use the computers, and I'm able to discuss the computer's function with other people, whereas before I was illiterate.

Why I went into it in the first place? To learn what all the hieroglyphics and arrows meant, like I saw on TV. Now I know what's going on… I understand better what I see on TV.

It opened up a new area of what's very prominent in life today. My children use the computer all the time, and now I know what they are talking about.

I think I feel just a little less out of it. I didn't even know the vocabulary. I don't mind being old – but I don't like being so out of touch.

I don't feel quite as dumb when people talk about e-mail and this and that.

I'm [now] not quite as stupid as I was.

I'm thrilled not to be ignorant about computers.

Comments in this category had some of the highest emotional weight to them. Most of the participants were absolutely thrilled to be part of a society again that they had been feeling excluded from because of their "ignorance" of computers.

Strengthening of social networks

E-mail was clearly the activity identified by teachers, volunteers, site coordinators and participants themselves as providing the greatest benefit. One of the most experienced teachers stated, "No doubt, the most important [benefit] is being in touch with loved ones by e-mail."

One volunteer reported:

Sometimes [when] the family e-mails jokes, the participant laughs heartily. Excellent stimulation when they create e-mail.

Mrs. F. reported using e-mail to get back in touch with old friends from 60 years ago who now live in Toronto and have limited mobility. She also was very excited that her grandchildren replied to her e-mails with photos and music.

Mrs. J.'s eyes sparkled and her entire face lit up as she talked about receiving e-mail from all over, from her grandchildren and her daughter.

Mrs. K. was extremely animated as she talked about the benefits of the program for her:

> Very much. I think it made a big difference, because I was able to communicate with people and I wasn't able to communicate with them before.

This included e-mailing a sister who lived in Montreal, but who is extremely difficult to reach by telephone, as well as a daughter in Sweden and another daughter in a remote part of Quebec. Mrs. K. also found herself a computer pen pal to correspond with. She says about the computer: "I think it's gorgeous!"

Mr. L. reported that: "It helped me get in touch with a nephew I haven't seen in over 15 years."

Miss M. also was able to communicate with loved ones she had been almost cut off from.

> I can communicate with my brother who's alone in Singapore, who is 86 years old – and my friends in California and Montreal.

Mrs. N. said, "The e-mail is a great joy for me," because it put her back in touch with her daughter in Switzerland and friends in France.

Those who did a lot of e-mail were most likely to still be using the computer at the end of the project (χ^2 (2, n = 53) = 11.90, p < .01) (see Table 9). Almost all of those who reported a lot of e-mail usage are still using the computer at 6 months, while very few of those reporting no e-mail usage are still using the computer.

Table 9: Degree of E-mail Usage Related to

Continued Use of Computers.

Degree of e-mail usage	Total	Still using computer at 6 mths		Not using computer at 6 mths	
	n	n	%	n	%
Not at all	8	2	25.0	6	75.0
A little	25	18	72.0	7	28.0
A lot	20	18	90.0	2	10.0

Note: Number of respondents does not add up to 84 because not all respondents were interviewed at the post-test, and among those who were, not all answered this question.

The strengthening of social networks was not only related to e-mail usage. One participant, Mrs. T., was so hearing impaired that she was very isolated, even within the day centre. She would attend, but be unable to communicate with anyone. Furthermore, Mrs. T. suffered from a psychiatric illness that made it even more difficult to reach her. She was an unlikely candidate for the program, but the site coordinator was very insistent on her inclusion. By the end of the program, we considered Mrs. T. one of our major "success stories," not so much because of the content of what she learned, but because the use of computers enabled her to communicate with fellow day centre clients for the first time ever. One of the project staff had cabled the two computers together so that they could communicate with each other: What was typed on the keyboard of one computer appeared on the screen of the other. Mrs. T. was thus able to get acquainted with the person using the second computer through having an "on-line" conversation.

Participants also expanded their social networks through building relationships with teachers and volunteers. When I interviewed Mrs. W., she kept speaking about how wonderful

one of the young female volunteers had been and how much she had enjoyed her. After the interview, Mrs. W. went to her room to find the volunteer's name, which she had forgotten, in order to make sure I made a note of it. Mrs. R. also built a close relationship with J., one of the male volunteers at her site. Two weeks after J. left the project, Mrs. R. stopped using the computer.

One of the teachers, who was older herself, seemed particularly congenial to several of the participants, who mentioned the enjoyment they received from conversation with her. When the teacher was interviewed, her warm relationship with many of her students became apparent as she related anecdote after anecdote about one person and another and how these people had affected her. All the teachers and volunteers reported how much they had enjoyed the project.

Sense of mastery and increased self-esteem

This sense of achievement was a key benefit, especially because many of them never dreamed they would have the opportunity to learn computers and some of them thought they might be too old too learn. Almost half the participants, either directly or indirectly, mentioned that they experienced a sense of mastery and achievement as a benefit of learning the computers.

> I wanted to master something and they said I couldn't. I never typed or used a computer in my life. I don't have much schooling. My children didn't think I could do this. I proved them wrong and I'm not finished!

> I think it's gorgeous because I now do know that I'm teachable. I now know that I can. I appreciate myself more.

Mental stimulation and challenge

This category is closely related to the previous one, but participants who mentioned mental stimulation were often concerned about slowing down the deterioration of their memories

through using the computer. While the previous category was connected with self-esteem and self-confidence, this category is more connected with maintaining and improving cognitive functioning. However, for both categories, much of the feedback was characterized by excitement, as illustrated by some of the following comments:

> Oh, it stimulates one! It's very good. Otherwise we'll get fossilized if we don't learn anything new.

> Glad to be learning something new. At this age, we need to keep our brain going.

There were less comments about mental stimulation than the preceding categories (just over 10% of respondents mentioned it), but it seemed to be an important reason for this minority of participants.

Filling a Void

For just over 10% of the participants, using the computer was a way to fill a void in their lives or it provided an interesting way to make time pass.

> It's filled quite a void in my life. I live alone.

> It's helped me a whole lot. It's very boring to be left all alone. When I feel depressed, I sit down at the computer. I'll play patience, bridge, poker.

> It puts in time. There's a lot of time to be put in here.

Mr. O. hoped that the computer would replace the loss of an extremely important activity in his life. He had been a lifelong flute player, and this had given him great joy over the years. However, at this point, his vision had deteriorated to the point where he was unable to read music anymore, and his memory was no longer adequate to memorizing the musical pieces. He clearly stated at the beginning of the project that he hoped the computer would replace this void.

Visual adaptations made it possible for him to use it, and he really enjoyed it, but unfortunately, by the 6-month mark, it appeared that he would not be able to use the computer much longer either, due to near blindness.

Learning and acquiring of new knowledge

Almost one third of the respondents mentioned the joy of learning and that they enjoyed acquiring new knowledge. Although this was mentioned by quite a large number of participants, it was rarely the main benefit mentioned and does not carry the same emotional intensity as do most of the other categories.

It was all very interesting. It was fun. I accessed the McGill University catalogue.

I had no knowledge whatever of computers, never having seen one. I learned a great deal about computers.

I liked everything. There's so much to learn and it's so interesting.

When you're in your 80's, it's nice to know you can still learn something new.

Mrs. P. wanted to learn the computer because she enjoys crossword puzzles and kept missing the answers related to computer terms. She said: "There was a new language that I didn't know and I felt that I was missing out on a lot.

Benefits to Teachers, Volunteers and Institutions

Teachers and volunteers all reported how much they had enjoyed being part of the project. Furthermore, the institutions themselves benefited, in being able to attract new clients or residences more easily because of the computer program.

CHAPTER 7:

DISCUSSION AND RECOMMENDATIONS

Key Findings

The Connections project taught frail, older seniors in three day centres and two seniors' residences how to use the Internet over a six-month period. Eighty-four participants (26 males and 58 females) with a mean age of 85.5 took part in the study. Day centre participants were five years younger, but had lower physical health scores than participants at residences. Participants came from a variety of ethno-cultural backgrounds and life experiences. Educational levels varied, from several who had grade 3 education to those with graduate degrees. Most participants had some level of physical disability, especially in terms of vision, hand mobility and general mobility.

We learned a great deal about how to implement such a computer instruction program with a very frail clientele in settings such as day centres and residences[4]. In general, a program such as the Connections Project requires a high level of commitment, from the institution, from the coordinator, and in terms of finding, training and retaining volunteers.

Although participants used a variety of programs, the most popular was e-mail, as reported by over three-quarters of the people interviewed. Apart from e-mail, computer usage depended on the participants' interests and ranged from surfing the Internet to using Word for a variety of personal projects to playing games.

Most participants experienced a variety of self-reported benefits. One of the most important was that after receiving some computer instruction, they reported that they now felt

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[4] Specific recommendations are in the Report for Coordinators.

part of society again. Previously, they had felt left out and unable to converse with their children and grandchildren about the computers that seemed to be such a large part of their lives, but now they were able to do so.

Another key benefit was the strengthening of their social networks, not only by e-mail, but also in their new relationships with teachers, volunteers and each other. Many participants used e-mail to be in more frequent contact with their children, grandchildren and other friends and relatives who lived far away.

Other major benefits included a sense of mastery and achievement, the pleasure of gaining new knowledge and just learning how computers work. For many, it provided much needed mental stimulation and challenge, while for others, it was a way to fill a void in their lives. Almost all the participants reported multiple benefits in these categories.

Persistence rates in the program varied. Of the original cohort 81% completed the nine-week course, and after six months 53% were still planning to continue computer activities. Some felt they had achieved their goals after this period and felt no need to continue for the entire six months. Over half, however, continued to use it at the end of the six-month period and intended to continue using it in the future.

The only predictive variable for persistence was that of e-mail usage. Almost all those who reported a lot of e-mail use, and almost three-quarters of those who reported a little e-mail.

Limitations of the Study

This study had several limitations, the most important of which is that it did not have an experimental design, in order to maximize the size of the group participating in the program. A second limitation is that although the sample size of this study is fairly large in comparison to

similar studies, at 84 participants it is nonetheless fairly small. Third, a number of the frailest participants did not answer all the questions, which reduced the numbers for pre-test and post-test comparisons and which also potentially skewed some of these comparisons. Finally, the findings are only somewhat generalizable. Although the participant profile shows a variety of backgrounds and characteristics and the five selected sites were also varied, generalizability will depend on how closely other sites and participants resemble our sample.

Implications for Similar Programs

One of the major implications for similar programs is that it is very difficult to predict who will be successful in such a program. This means that almost anyone who fulfils some minimal inclusion criteria can enjoy the benefits of learning the computer. At a minimum, potential participants need to be screened for basic cognitive functioning and enough hand mobility to be able to use the mouse and the keyboard, even if slowly and laboriously. Some minimal amount of vision is also required. However, beyond these basic criteria, some of the most unlikely candidates can be among those who benefit the most. People with limited literacy, grade three education, limited hand mobility, limited vision and hearing, Parkinson's sufferers, stroke victims, people in wheelchairs – these were among some of the most enthusiastic and motivated participants. Age is also not a limitation – we had six participants over the age of 90, four of whom were over the age of 95!

Many of the participants were able to successfully overcome what we had thought might be barriers to learning. Simple, minimal cost visual adaptations worked for most of those who reported a concern about a visual disability at the beginning of the study. Those with low education and literacy levels were among the most excited about their achievements. Computer

features such as spell checkers and the ability to enlarge letters aided such participants in overcoming their limitations.

One important question raised in this study was: "Who defines success and how can it be measured?" Normally, in evaluating instructional programs, success is defined by the amount of learning acquired and retained, and participants are tested on their knowledge. However, in this study, we permitted participants to define success for themselves. The benefits reported by participants and confirmed by teachers, volunteers and site coordinators did *not* depend on the knowledge retained by participant or their ability to use computers autonomously.

Some participants had high expectations for themselves around their ability to use the computer autonomously or the progress they made in the first nine weeks. When these expectations were not met, they expressed a great deal of frustration and disappointment with themselves that not only took away from the joy of the experience, but, in some cases, may have been a factor in their leaving the program. Therefore it is important to set realistic expectations regarding what participants will learn, so they will not be disappointed. They should be told that since they will be getting only limited computer time, they will not be expected to learn enough to operate entirely on their own. However, they will have the opportunity to use computers and the Internet, develop some basic skills, and gain an understanding of what this technology offers. It is not that they are incapable of learning to function autonomously, it is just that the limitations of having computer access only one hour per week makes it impossible to do so in a relatively short period of time.

This study shows that older participants *can* learn the computer and derive important benefits from computer usage. So why is it so difficult to obtain funding for computer purchases for this age group and why are there so few computer programs available for the oldest age

group in society? Most likely, ageism is a major factor. Too many people believe that seniors, especially those over the age of 80, are incapable of learning how to use computers. It is difficult to convince funders and administrators to invest in learning projects for this age group.

Learning computers is an important way to empower seniors and combat ageism. It gives seniors access to information and breaks down a major barrier to full participation in society. Hopefully as more and more seniors become computer literate, these stereotypes and barriers will be shattered and computer programs will become more generally accessible to this group, along with the benefits to be derived from them.

Implications for Research

Future research should include a replication of this study, but with an experimental design if sufficient numbers of participants can be found. It was the impression of some of the site staff (a nurse and some of the site coordinators) that the computer program cohort had considerably lower absentee rates (in day centres) and even lower illness and death rates. To test this potentially important possibility, one type of measure to be included should be rates of absenteeism, illness and death between an experimental group and a control group.

Another direction for future research is to look at the benefits from relationship built as a result of the computer program itself through interaction with volunteers, teachers and each other. An intergenerational program where children and youth work together with seniors on computers could have a wide range of psychosocial benefits and would challenge stereotypes about aging among the participating youth.

This study raises questions about the concept of social integration, which is normally operationalized in research in terms of social networks based on face-to-face contact. The results

suggest that social integration may involve more this – it also has to do with having skills and knowledge that are part of full participation in society. Research should be undertaken about how seniors themselves define social integration. What particular dimensions of social life are important to seniors in terms of them feeling either integrated or socially excluded?

Finally, ageism was an indirect theme of the study, although it was not explicitly defined as a research focus. The notion of people in their 80s and 90s learning the computer was astonishing and even unbelievable to potential funders, to some of the participants themselves, to some of their relatives and to society at large. Future studies could begin by surveying more specifically the attitudes of different groups about the possibilities of seniors learning computers. Programs to change such stereotypes could be developed and evaluated. In particular, such research should focus on younger generations, whose attitudes already too often reflect ageist stereotypes.

Conclusions

The project was very successful, not only in how it answered the four research questions, but also in the generally enthusiastic and excited feedback of participants, teachers, volunteers and site coordinators. It worked in different settings with a wide variety of individuals. The outcomes show that it is well worth the effort of implementing and maintaining such a program in terms of the benefits it provides to the participants, as well as to the institutions, the teachers and the volunteers.

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APPENDICES

McGill Centre for Studies in Aging

Connections: Internet Access for Frail Seniors

Purpose

The purpose of this project is to offer older adults with limited mobility the opportunity to use computers and the Internet to access information and communicate with others. Possible benefits to the participants are to enhance their social support, increase self-esteem and their sense of independence, decrease loneliness and social isolation, and improve the public image of seniors.

Evaluation of the impact of this intervention will have the following aims:

    A. *To examine the feasibility of providing the necessary resources,*
       both human and technical.

    B. *To see who participates.*

    C. *To determine how much and for what purpose participants use the computers.*

    D. *To examine what psycho-social benefits are experienced by participants.*

The project

The Education Task Force of the *McGill Centre for Studies in Aging* has developed this project. The main source of funding is a grant from the Federal Government's *Office of Learning Technologies*. The *Fondation l'age d'or* is raising funds for the technical resources.

The computer program will be offered at five locations:
    Griffith McConnell Residence,
    Henri Bradet Day Centre of the Centre Hospitalier Richardson,
    The Day Centre of the Jewish Nursing Home,
    Place Kensington, and
    St. Margaret's Day Centre.

We anticipate at least 50 participants in all.

Computers will be installed in each location and made available on a regular basis. Volunteer participants will be trained to use the computers for writing (word-processing) and encouraged to use e-mail to correspond with family, grandchildren, friends and former colleagues. They will also be shown how to access the Internet to seek and exchange information related to their interests, hobbies, health care and current events. Each participant's activities will be monitored for a six-month period

Volunteers familiar with computers will be at hand during the study to provide assistance. Students from local high schools and universities, and peer volunteers from seniors' organizations have expressed interest in providing this support on a regular basis.

Evaluation

The study will evaluate the feasibility of offering computers and Internet access in a similar setting. Staff will record the amount of time each participant spends using the computer, as well as various qualitative measures relating to the experiences of participants, volunteers and staff.

There will also be an evaluation of the outcomes. Data will be collected in semi-structured interviews with participants at baseline, before computer use begins, and after six months experience of using the computer. Both quantitative and qualitative data will be analyzed to examine what benefits are experienced, and related to the participants' psycho-social well-being.

Dissemination of Results

A reference manual suitable for coordinators of similar senior institutions and their clients, will be printed in both English and French and made available to relevant Canadian organizations and institutions. Reports of the study will be distributed across Canada to seniors' residences and day-care centres, health care professionals, and seniors learning organizations. Findings will also be reported to major providers of computers and network services. Journal articles will be written and the project will be presented at the Annual Meeting of the *Canadian Association on Gerontology.*

COURSE OUTLINE

Lesson 1   Introduction to hardware
Goals of course, including demo of Internet
Use of Mouse – Solitaire

Lesson 2   Switching on and off
The keyboard
Entering text in WORD
Exiting WORD from the <u>F</u>ile menu

Lesson 3   Editing text
The Standard Tool Bar: Print, Preview, Undo
Folders and drives
Opening and Saving a document

Lesson 4   Review

Lesson 5   Selecting text
Cut, Copy, Paste

Lesson 6   The Internet
Dialing in
Internet terminology
Searching the Web
Windows buttons and scroll bars

Lesson 7   E-mail
Registering with Hotmail
Sending a letter on Hotmail

Lesson 8   Logging in to Hotmail
Reading mail
The address book
Hotmail help

Lesson 9   Internet Toolbar: Favorites, Fonts, History…
Signing up for an e-mail list

Connections Project

Computer Log

NAME	Griffith McConnell Residence

DATE	TIME ON COMPUTER (in minutes)	ACTIVITY*	COMMENTS

* W = word processing   G=game   E=E-mail   I=net search

Pre – Project Questions for Coordinators

SITE:_____

COORDINATOR NAME: _____

1.   How many of your clients/residents will participate in the project? _____

2.   What process was used to identify this group?

   _____

   _____

   _____

3.   Did any people decline to participate in the project at the initial information meeting, and if so, for what reason?

   _____

   _____

4.   What is the total number of the clients/residents from which they are selected?   _____

5.   Can you make any general comments about how those who are not participating differ from those who are?

   _____

   _____

   _____

6.   What benefits do you anticipate the participants will gain from the project?

   _____

   _____

   _____

Connections Project

Questions for Coordinators Focus Group

Thursday December 2nd, 1999

1. What were the challenges you encountered in getting the computer program started?

   _____

   _____

2. What resources will be necessary to keep the program going now that the research project is finished?

   _____

   _____

3. What benefits did you observe participants getting from their experience?

   _____

   _____

4. What advantages are there for you and your organization, in having this program available?

   _____

   _____

5. What suggestions would you make for improving the teaching and learning aspects of the computer program?

   _____

   _____

6. What recommendations would you make to someone who wanted to introduce such a program?

   _____

   _____

McGill Centre for Studies in Aging
Connections Project

Questionnaire for Volunteers

Name: _____   **Today's date** _____

1. At which site are(were) you a volunteer?   _____

2. For how long?

    For _____ months ____ weeks.   For how many hours each week? _____

3. Name three things that, in your opinion, the participants are gaining by learning the computer and the Internet:

    1. _____

    2. _____

    3. _____

4. Do you have any specific examples or anecdotes that illustrate the value to the participants of their computer experience?

5. What barriers to learning have you observed among the participants?

6. On a scale of 1 to 5 how much have you enjoyed your volunteer experience?

U   **U**   **U**   **U**   **U**
1   2   3   4   5
Not at all   Very much

7. What is/was the most rewarding aspect of your role?

8. What is/was the most difficult aspect of your role?

Please tell us about yourself:

9. Why did you choose to volunteer?

10. How did you hear about the project?

11. Please check your age group:
   U   **U**   **U**

   Under 25   25 to 55   Over 55

12. What is your principal activity: (e.g. employment, studying, seeking work, retirement)

10. If you are no longer volunteering, why did you stop?

We would welcome any additional comments you would like to submit either in the space below or on a separate sheet.   Thank you again for volunteering!

McGill Centre for Studies in Aging
Connections Project

Teacher Interview

Name: _____

1.   Name three things that, in your opinion, the participants are gaining by learning the computer and the Internet:

    1. _____

    2. _____

    3. _____

2. Do you have any specific examples or anecdotes that illustrate the value to the participants of their computer experience?

3. What barriers to learning did you observe among the participants?

4. At which site(s) did you teach? ————————————————————

   Did you find differences in general between participants at the different sites?

5. What differences, if any did you find between these students and other groups you have taught? _____

6. How closely did you follow the course outline?

_____

7. How helpful were the suggested exercises?

_____

_____

8. (a) How helpful was the manual to the participants?

_____

(b) How helpful did you find it as a teaching tool?

_____

_____

9. What changes would you recommend to the computer course, if it were to be offered again to a similar clientele?

_____

_____

10. What changes to the available hardware and software would you recommend?

_____

_____

11. What was the most rewarding aspect of your teaching experience?

_____

_____

12. What was the greatest challenge of this teaching experience?

_____

_____

Further Comments? _____