

Bridging the Digital Divide for Urban Seniors: Community Partnership

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Computers and the Internet offer older adults resources for improving health. For many older adults, the “Digital Divide” (the social, economic, and demographic factors that exist between individuals who use computers and those who do not) is a barrier to taking advantage of these resources. Bridging the Digital Divide by making computers and the Internet more accessible and making online health information more usable for older adults has the potential to improve health of older adults. This article describes a strategy for closing the Digital Divide for urban seniors through the formation of a community–university partnership with the goal of improving health and well-being through the use of online health information. (*Geriatr Nurs* 2010;31:455-463)

Introduction

Access to credible health information can have a positive impact on the health of an older adult. Healthy aging is the development and maintenance of optimal physical, mental, and social well-being and function in older adults.¹ For example, for information on physical conditions, an older adult can go online to find information about prevention or management of a specific disease such as arthritis or diabetes or health promotion issues such as weight control, healthy eating, oral health, or immunizations. For information on psychological or mental health issues, an individual could look for information on depression, stress management, or community resources. To address social issues such as isolation, the tools of e-mail and instant messaging can help older adults remain socially engaged with family and friends. Even the process of going online can be intellectually and cognitively stimulating. Internet technology empowers many older adults to take more control over their

own health information and health status and can potentially help them move toward healthier aging. Today’s nurses recognize that using information technology and the Internet to access health information can have a positive impact on the physical, mental, and social dimensions of healthy aging.

Currently, 43% of older Americans use the Internet, which represents a nearly 50% increase in online use from 2004 to 2008.^{2,3} The top reasons older adults go online include using e-mail; online searches to learn about products, travel, hobbies, and so on; and getting health information. However, even though older adults’ use of the Internet is increasing, many do not retrieve online health information because of a lack of computer literacy or access to computers. A particularly vulnerable group of older adults are those of low-income minority status who reside in large urban communities.⁴ Improving access to online health information and resources and creating more user-friendly online information for older adults are potential ways to reduce health disparities among urban older adults. In their role as patient advocates, nurses can help urban older adults develop skill and competence in using the Internet to locate and evaluate health information. One way to accomplish this is through development of a community partnership.

Computers and the Internet offer older adults opportunities and resources for improving health; yet, for many urban older adults, the lack of knowledge and access remain fundamental barriers to going online. A recent study found that the prevalence of computer use among urban older adults in the city of Detroit was 27%, but another 55% of nonusers indicated they would like an opportunity to use a computer.⁵ Even though there has been a rise in computer and Internet use by older adults, many older adults in low-income inner-city areas face more economic and usability issues than their nonurban counterparts. Many urban seniors cannot afford a computer, broadband access, other hardware, software, or technologies that make it easier to search for health-related information on the Internet.

In addition to the economic issues, many urban seniors experience accessibility/usability issues.

That is, even if computers and Internet access are readily available, some older adults cannot use them because they lack basic computing and literacy skills. Urban communities often lack convenient training programs designed to consider the lower literacy of urban older adults and the physical and motor difficulties older adults may have using technology.

An access issue for all older adults is that many websites are not designed for use by older adults.⁶ Many older adults have more trouble finding information on a website than younger adults because of visual, perceptual, and motor impairments. In addition, low health literacy among some urban older adults limits their ability to obtain and evaluate health information. Once older adults obtain some basic computer skills, however, nurses as community partners can steer them toward credible, well-designed websites with larger type fonts, simpler layout with less content per screen, and audio and video streaming—factors that improve Web access for older adults.⁷ They can also be instructed on how to evaluate the quality of online health information.

Community partnerships have been identified as an effective strategy for improving health in communities.⁸ In a community partnership that is committed to improving health of older adults, community members could partner with 1 or more groups interested in ensuring the health of older adults. This article describes a successful community—university partnership. The resident partners are seniors residing in a Housing and Urban Development (HUD) Neighborhood Network (NN) apartment building in Detroit. Older adults living in this region have a higher poverty rate and poorer health status than those living in other areas of Michigan.⁹ The NN program encourages owners of HUD properties and their management companies to establish community learning centers that improve computer access and literacy. The university partners are faculty researchers from the College of Nursing and the Institute of Gerontology at Wayne State University. A guiding philosophy for community partnerships is that keys to success are working with the residents to develop programs that specifically address their needs and interests. The university partners believe that the most successful programs for improving the health and well-being of older adults should be developed *with* them, not for them.

Development of a Partnership

The Path to University-Community Partnership model developed by Gass provided the framework for the Wayne State/HUD Community Partnership.¹⁰ The dimensions of the model include the following: 1) issues/opportunity; 2) catalyst/invitation to partnership; 3) threshold dimension; 4) partnership agreement; 5) operating the partnership; and 6) mutual benefit for partners and community.

Issues and Opportunities

This partnership opportunity arose when a new property owner of a 472 senior apartment building in the city of Detroit included a Technology Center as part of an extensive property renovation. A major concern facing the property managers was whether residents would use this state-of-the-art technology center. Currently, the center includes 10 computer workstations with broadband access and printing capabilities. It is open weekdays from 9 AM to 6 PM.

Catalyst and Invitation to Partnership

In the summer of 2006, the university was approached by the new managers of the property and invited to discuss a potential partnership. One property manager had previous experience partnering with Wayne State University and expressed interest in developing a similar new partnership. At the same time, 1 of the university faculty, a geriatric clinical nurse specialist, had previous experience teaching urban older adults how to use computers and the Internet in a nurse-run wellness center located in a senior apartment building.

Threshold Dimension

In the model, a threshold dimension is the starting point for building a successful partnership, and involves exploring dimensions of trust, respect, communication, and mutual understanding of assets and deficits to determine whether the partnership can address the stated goal. Our threshold exploration began by listening to the apartment residents describe their wants and needs related to the use of the technology center. The property management company's senior service coordinator set up a meeting in the summer of 2006 to introduce interested residents to one of the university partners. The purpose of the

meeting was to listen to the interests of the residents and to conduct an informal needs assessment. The meeting was attended by 50 residents interested in computer and Internet use and training. To win the trust and respect of the community, the university implemented a 6-week pilot resident training program titled "Introduction to the Technology Center" in fall 2006. Fifteen residents completed the program, and the property managers were pleasantly surprised at how many residents were excited to come to the technology center and participate. These residents communicated with others about the program, and a waiting list quickly developed. The property managers noted that residents were participating and showing pride in the center. They had actually observed residents bringing their family members and friends down and introducing them with the words, "This is our center."

Partnership Agreement

A verbal commitment to a partnership was made by the university, residents, and property managers. According to the model, an agreement may include the mission and goals, governance structure, community-based activities, assessment plan, and a plan for sustaining the partnership. The mission of our partnership was to empower residents with the knowledge and skills needed to use the technology center and its resources. The goals of the partnership included teaching interested residents how to use the technology center and its resources, building community among the apartment residents, encouraging technology-savvy residents to volunteer and mentor other residents coming to the center, and assisting the property managers and residents in achieving a Level 3 (Model) designation (discussed subsequently) for the technology center through the HUD NN program.

HUD NN Program Collaborations. In 1995, HUD addressed the issue of access with the creation of NN to promote self-sufficiency and help provide computer access to low-income housing communities. Today, more than 1500 centers provide people who live in HUD properties with computer classes and Internet access, as well as programs to address their educational, social, physical, and cultural needs. Centers are established through voluntary collaborations between residents and property managers of a HUD

complex and a variety of other partners. These partners vary from center to center and may include local businesses, nonprofits, educational institutions, and faith-based organizations.¹¹

HUD NN Model Designations. The HUD NN program classifies centers on 1 of 3 levels: Designated, Certified, or Model. *Designated* (Level 1) indicates the center has tools for creating effective programs and services for residents and must include a HUD-approved strategic tracking and reporting tool (START) business plan, a letter indicating the center is in operation, and a minimum of 1 computer workstation with Internet access. *Certified* (Level 2) indicates that the center has achieved and exceeded the *Designated* status, has been in operation for 12 consecutive months, and has completed a *Center Assessment and Evaluation* using the HUD START system. The highest classification, *Model* (Level 3), indicates the center has achieved *Designated*, *Certified*, and *Model* standards. A Level 3 Model designation provides a special status for HUD incentives such as identification on the national website, a chance to serve in pilot projects, special recognition during HUD NN week, and recognition in the HUD NN newsletter.^{12,13} Altogether, the HUD standards address the governance structure, community-based activities, assessment plan, and a plan for sustaining the partnership (see Table 1).

Operating the Partnership

According to the model, operating components for partnership include roles and norms, activity implementation, conflict resolution, shared credit and dissemination, and activity assessment. In the partnership, the role of the university was to assist the property managers and the NN Board of Directors in conducting resident surveys and in the development and evaluation of the training programs. The role of the residents was to identify prospective members for the Board of Directors, participate in identifying appropriate programming to meet their needs, and support the guidelines for using the technology center. The role of the property managers was to maintain the technology center with current hardware and software, as well as room furnishings and accouterments; to raise funds to maintain the center; to seek additional partners for future development; and to achieve 501(c)(3) status.

Table 1.
**Housing and Urban Development
 Neighborhood Network Model
 Standards**

1. The center has been operational for 3 years.
2. The center conducts resident surveys at least once every 3 years.
3. Training and other programs shall include written curriculum or program guidelines.
4. The center has a system that tracks, evaluates, and reports the results of the center's program activities to improve program performance and outcomes and increase resident participation.
5. The center is actively engaged with a minimum of 2 partner entities.
6. The center engages in fund development to increase financial sustainability.
7. The center environment should include the following: 1) high-speed Internet, 2) up-to-date and working equipment and operating systems, 3) accessible workspace and equipment, 4) implement security features, 5) operational for at least 30 hours weekly, and f) attractive and clean physical facility.
8. The center obtains 501(c)(3) status aligned with a 501(c)(3) organization.
9. A Board of Directors or similar body provides center governance.

Housing and Urban Development Neighborhood Network, 2009, 2010.^{12,13}

In addition to the Gass model, a framework that has guided the university's development and evaluation of programming is the Spiral Technology Action Research (STAR) model, which promotes a consumer-centered approach to using information technology through community partnership, development cycles, and technology design.¹⁴ This model supports the university's philosophy of creating programs *with* and not *for* older adults, as well as resident involvement (Standard 2) for achieving the Model (Level 3) designation of the NN. The STAR model's development cycle includes 5 steps: listen/dialogue, plan, do, study, and act. For the Wayne State/HUD partnership, the first step of the development cycle was to listen to the users. Listening to and dialogue with the residents began at the informational meeting held in July 2006 and with the analysis of the HUD NN resident survey ($N = 35$) conducted for the property managers by the senior service coordinator.

Topics identified at the resident meeting focused on learning to use the computer, e-mail, searching the Internet, finding recipes, and genealogy. Results of the HUD NN survey (see Table 2) indicated that 85.4% ($n = 30$) had minimal computer literacy and expressed interest in learning how to use computers (91.4%, $n = 32$) and the Internet (88.6%, $n = 31$).

By listening to the residents, we learned that "Introduction to the Technology Center" should be the initial program offering. Planning the program offering began with a review of current literature on training older adults to use computers. Issues to address in the planning process involved age-related cognitive and physical changes requiring longer learning time, performance and motor error requiring additional assistance and time to finish learning activities,¹⁵ and visual distraction requiring the use of usability guidelines for older adults.¹⁶ Research findings indicate that there is not a clear optimal method for teaching older adults to use computers.¹⁶ Features identified in programs with positive learning outcomes include: 1) holding older-adult-only classes; 2) using paired or small-group learning; 3) utilizing instructor-led, self-paced, hands-on instruction; 4) creating a goal-oriented program design; 5) offering senior-friendly written materials that are easy to read; and 6) providing a simple set of written step-by-step instructions.^{16,17} Using these findings as a guide, a student workbook was created. It contained a place for program schedules, indexes of class sessions, an 8-tab divider to separate written class materials (learner outcomes and PowerPoint presentation illustrations and a simple set of written instructions) for each session, and paper for taking notes.

The learning environment for the program focused on older-adult-only classes using a small-group format. Class sessions were designed and led by a university faculty member incorporating a self-paced, hands-on approach to instruction. In addition, several residents with computer experience from the building became coaches to assist participants during the hands-on experience and during practice sessions outside class time. The property managers provided stipends for the resident coaches. A goal-oriented program design was used with continuous feedback from the participants and new residents. Table 3 shows the teaching plans for the 6-session program.

Table 2.
Neighborhood Network Survey Demographics

Category	Number (<i>N</i> = 35)	Percentage
User overview		
■ Adults 21–61	5	14.3
■ Seniors 62 years and older	30	85.7
Race		
■ American Indian or Alaska Native	1	2.9
■ Black or African American	33	94.3
■ More than 1 race	1	2.9
Sex		
■ Female	28	80
■ Male	7	20
User characteristics		
■ Single-parent household	1	3.3
■ Female head of household	22	73.3
■ Male head of household	7	23.3
Users with disabilities		
■ Physical	8	22.9
■ Both physical and mental	2	5.7
■ None	25	71.4
Educational level		
■ Some high school	8	23.5
■ High school graduate or GED	7	20.6
■ Some college	6	17.6
■ 2-year college	9	26.5
■ 4-year college	2	5.9
■ Graduate degree	1	2.9
Computer literacy		
■ Minimal	30	88.2
■ Average	3	8.8
■ Above average	1	2.9
Topics		
■ Introduction to computers	32	91.4
■ Introduction to the Internet	31	88.6

The program was advertised using posters located on the technology center door, the senior service coordinator's office door, and above the resident mailboxes. The senior service coordinator was responsible for registering participants. A \$10 fee was charged to each participant for the program. If participants were unable to pay the fee, scholarships were awarded at the discretion of the senior service coordinator. The fees were used to establish a technology center fund to meet the emerging needs of the center. In December 2006, the property managers provided a graduation ceremony for residents who attended at least 5 of the 6 sessions. Each resident received a certificate of completion and a computer pin provided by the university indicating their achievement.

The university evaluated the success of the program by implementing a post-assessment titled "So, what have you learned?" in session 6. Each participant was able to meet the session objectives outlined in Table 3. In addition, participants enthusiastically requested additional programming on e-mail and searching the Internet. From the time the program started in 2006, about 100 residents have attended the program offerings, with 10 residents attending all programs.

Based on the success of the fall 2006 programming and listening to the participants and residents, additional programs were created. Three programs were offered to the residents in winter of 2007: "Introduction to the Technology Center," "Using E-mail," and "Searching the

Table 3.
Teaching Plan for “Introduction to the Technology Center”

Class Sessions	Learner Outcomes	Content	Resources	Evaluation
How to turn on the computer: Understanding how it works	<ol style="list-style-type: none"> 1. Name the 2 major parts of a computer system 2. Identify the visible pieces of workstation hardware 3. Tell the purpose of software 	Computer system <ul style="list-style-type: none"> ■ hardware ■ software Computer workstation <ul style="list-style-type: none"> ■ display unit ■ computer ■ keyboard ■ mouse Purpose of software	Student workbook <ul style="list-style-type: none"> ■ learner outcomes ■ PowerPoint illustrations and handouts 	Mastery of the skills checklist for turning the computer system on and off Post-assessment
What is the mouse, and how do I use it?	<ol style="list-style-type: none"> 1. State the purpose of the mouse 2. Demonstrate how to hold the mouse 3. Explain the mouse functions of mouse <ul style="list-style-type: none"> ■ pressing ■ clicking ■ double clicking ■ dragging 4. Demonstrate how to use the mouse functions 	Purpose of the mouse Anatomy of the mouse <ul style="list-style-type: none"> ■ left button ■ scroll wheel ■ right button How to hold the mouse Mouse functions <ul style="list-style-type: none"> ■ pressing ■ clicking ■ double clicking ■ dragging Practice using the mouse	■ Illustration of the step-by-step procedure for turning the computer system on and off Student workbook <ul style="list-style-type: none"> ■ learner Outcomes ■ PowerPoint illustrations and handouts 	Mastery of the skills checklist for using the mouse Post-assessment
Mastering the mouse: practice, practice, practice	<ol style="list-style-type: none"> 1. Practice using the mouse functions 	Review using the mouse <ul style="list-style-type: none"> ■ purpose ■ holding ■ functions Practice <ul style="list-style-type: none"> ■ mouserobics ■ jigsaw zone 	Mouse practice: http://www.seniornet.org/howto/mouseexercises/mousepractice.html Mouse practice: www.ckls.org/~crippel/computerlab/tutorials/mouse/page1.html Dragging practice: www.jigzone.com	Mastery of the skills checklist for using the mouse
Anatomy of the keyboard	<ol style="list-style-type: none"> 1. Identify the location of the following keys: <ul style="list-style-type: none"> ■ escape ■ back space ■ enter ■ shift 	Overview of the keyboard Identification of the commonly used keys <ul style="list-style-type: none"> ■ escape ■ back space 	Student workbook: <ul style="list-style-type: none"> ■ learner outcomes ■ PowerPoint illustrations and handouts 	Complete form on page 29 of mouserobics

<p>Introduction to Windows</p>	<ul style="list-style-type: none"> ■ caps lock ■ tab <p>2. Demonstrate the use of the keyboard to fill out a form</p>	<ul style="list-style-type: none"> ■ enter ■ shift ■ caps lock ■ tab <p>Practice filling out a form on the computer</p> <p>Overview of Microsoft Windows</p> <ul style="list-style-type: none"> ■ operating system ■ show the window and multiple windows <p>Demonstrate the hidden balloons</p> <ul style="list-style-type: none"> ■ purpose ■ icons <p>Important Icons and their functions</p> <ul style="list-style-type: none"> ■ minimize ■ restore ■ close <p>Finding the day, date, and time</p> <p>Practice using these Windows features</p> <p>Post-assessment</p>	<p>Keyboard practice www.ckls.org/~crippel/computerlab/tutorials/mouse/page29.html</p> <p>Student workbook:</p> <ul style="list-style-type: none"> ■ learner outcomes ■ PowerPoint illustrations and handouts 	<p>Demonstrate minimize, restore and closing a window</p> <p>Post-assessment</p>
<p>So, what have you learned?</p>	<ol style="list-style-type: none"> 1. Demonstrate the knowledge and skills learned in the previous sessions 2. Explain the purpose of the Desktop in Windows 	<p>Overview of the Desktop</p> <ul style="list-style-type: none"> ■ software Icons ■ task bar ■ start menu 	<p>Post-assessment in a PowerPoint presentation</p> <p>Student workbook:</p> <ul style="list-style-type: none"> ■ learner outcomes ■ PowerPoint illustrations and handouts 	<p>Group answers post-assessment questions:</p> <ol style="list-style-type: none"> 1. Is this a picture of hardware or software? 2. How do you check to see if the computer is on? 3. How do you turn the computer off? 4. How do you turn the computer on? 5. Show me how to hold the mouse. 6. What does the left mouse button do? 7. What does the right button do? 8. What is Windows? 9. What do these icons do? 10. How do you check the day and the time?

Internet.” The challenges of offering the new programs centered around the impact of visual distraction on older adults. The challenge is frequently seen on the e-mail service provider websites and Internet search engines. The university addressed this issue by reviewing the usability guidelines for older adults found on the NIH Senior [Health.gov](http://www.health.gov) website. On the basis of these guidelines, the e-mail service provider My Way and the search engine Google (appearing as the home screen when residents opened the Internet browser) were selected. These website screen designs were simple, easy to read, and had plenty of white space, so visual distraction was kept to a minimum. In late 2008, My Way changed its e-mail format, and participants found it difficult to use, so the university switched to Gmail as its e-mail service provider. Additional program offerings have included word processing and creation of signs and cards using Microsoft products. The newest program, “Learning to Use the Internet to Help You Take Care of Your Health,” helps residents develop skill and competence in using the Internet to locate and evaluate health information while protecting their privacy.

We continue to implement the development and evaluation steps of the STAR model. The university partners have faced a number of program challenges, including scheduling, attendance, and resident skill level (eg, ability to use the mouse and keyboard, literacy skills). The senior service coordinator has worked closely with the university to provide minimal conflict in scheduling the technology and health programs. A monthly newsletter that includes an activity calendar is now received by all residents as a reminder to promote session attendance. For those participants having difficulty controlling the standard mouse, a trackball mouse is now available. Strategies to address keyboard and literacy skills include self-paced sessions under the direction of the university partner, the availability of coaching outside class time, and use of websites that provide written, video, and voice instructions. Each summer, the property managers provide a graduation ceremony for the residents who have attended the various programs throughout the academic year with a reception to follow for their family and friends. Pictures are taken as each resident receives a certificate of

completion indicating their achievement, provided by the faculty partners.

Mutual Benefit for Partners and Community

This partnership has provided a number of benefits to the residents, property managers, and faculty researchers. A key benefit to all members of the community partnership has been the growth of mutual trust, respect, and open and honest communication.

Residents interested in computers and Internet use and training but unable to afford a computer and broadband access have benefited from the presence of the technology center and training in their apartment building, allowing them to cross the Digital Divide. In addition, residents have played an active role not only in the managing the technology center through their HUD NN but also in designing the various training programs through the university’s use of the STAR model framework, which supports the philosophy of doing *with* and not *for* the residents. Those residents who have attended programs on learning to use the computer (ie, e-mail and the Internet) to search for topics of interests and health have benefited from the ability to remain socially engaged with family and friends and have improved their control and access to quality health information resources.

Partner benefits for the property managers have included active use of the technology center, ability to provide technology training, community building among residents using the technology center, use of technology-savvy residents as coaches in the technology center, and creation of a HUD NN. Currently, daily use of the technology center ranges from 20 to 50 residents. The most common activities include games, e-mail, and searching the Internet. Training programs are provided each semester including summer. Resident coaches are available daily and work not only with residents taking the classes but also other residents who have the coaches help them access games or find information on the Internet about programs they have heard about on TV. The technology center received a Level 1 HUD NN designation after 1 year of operation. A Level 2 designation was achieved in spring 2009. The partners are currently working on meeting the criteria for Level 3 designation.

Insight into the needs and wants of the community in the use of information technology and improving or maintaining health is a key benefit for the university. This insight enriches the research conducted by the university and enables researchers to identify study questions that address the concerns of urban seniors and also maximize recruitment and retention efforts, use methods and approaches that are sensitive to communities' needs, and develop and test relevant interventions that are more likely to succeed.

Conclusion

With this partnership, we have begun to develop trust, respect, communication, and mutual understanding. Our future goal is to use the STAR model to develop eHealth applications that are easier for urban older adults to access and use. The contribution of the partners will ensure programs that are not only sound but, more important, that they are perceived to be relevant, usable, accessible, convenient, and beneficial to urban older adults.

In the long term, the university hopes to conduct research with our community about whether access to culturally sensitive, age appropriate, online health information can have an effect on the health outcomes of older adults. Part of this process will include creating new websites and a health portal for older adults and also evaluating Internet sites for credibility and usability for older adults. Overall, our community–university partnership has successfully provided inner-city minority older adults access to valuable online resources. In the future, partnerships can continue to implement strategies to help seniors achieve better health outcomes by using online health information.

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