

Technology and Learning in Current and Future Generations of Elders

By Sherry L. Willis

This article examines the current and future role that technology can play in the learning activities undertaken by elders. Of primary interest are learning activities that are encountered in everyday life and that have to do

with (1) use of computers and the Internet to acquire knowledge and skills, and (2) the knowledge and skills required to use computer and Internet technology. In the commercial and public sectors, technology-based learning is often referred to as “e-learning.” E-learning has been defined as learning experiences delivered or enabled by electronic technology. Some believe that in the future, technology will have an even greater impact on education than it currently has on commerce. The United States currently spends more than \$700 billion in the education and knowledge arena—the education industry is the second largest, behind healthcare. These data represent current educational spending in general, not limited to e-learning. The smallest and newest group arrival in the education arena are the the lifelong learners—3.9 percent. But as the Internet occupies a larger presence in citizens’ lives, this segment is projected to increase

*The challenge
and promise of
e-learning.*

(U.S. Department of Commerce, 2002).

DEMOGRAPHICS OF ELDERS ONLINE

One of the most critical issues in discussing use of technology by elders is to distinguish characteristics

of current versus future generations of online elders. Within less than a decade, the demographics of elders expected to be online will change drastically. The majority (56 percent of those currently ages 50–64 years, the early baby boomers) have Internet access, have used computers and the Internet in their work lives, and report that they would miss the Internet if they could no longer use it, whereas only a few years ago, Lenhart (2000) reported that a majority of people 65 and older said that they were not online and had no plans to go online. In contrast, the early baby boomers, the future elders, match the overall Internet population in their current use of the Internet for e-mail, search for political news, checking weather, and doing research for their jobs and lives. Those on the verge of entering the retirement years may be the generation most likely to take advantage of all the Internet has to offer them as they get older.

Several demographic factors have been found to be associated with use of computers and the Internet (U.S. Department of Commerce, 2002; U. S. Census Bureau, 2000), including age and cohort as discussed above, educational level, being in the labor force, occupation, and type of household.

Education. The higher a person's level of education, the more likely he or she is to be a computer or Internet user, with those having a B.S. degree or above being most likely to use a computer. Across all age groups, for those with less than a high school education, only 17 percent use a computer and only 13 percent use the Internet. Approximately 15 percent of people currently 55 to 59 years of age (future elders) have less than a high school education, in contrast to 25 percent of today's elderly.

Workforce and occupation. Being in the workforce is a major factor in acquiring and maintaining computer skills and in having access to the Internet and a supportive environment in which to learn these skills. Three quarters of middle-aged baby boomers are working, compared with 49 percent of those ages 60–64 years. Only 13.7 percent of those currently 65 years of age and over are included in the civilian work force.

Computer and Internet usage also varies by occupation. For example, 80 percent of managers and professionals use computers, 71 percent of sales and technical workers, and only 20 percent of operators and laborers (U.S. Department of Commerce, 2002). However, although only 14 percent of current elders are in the workplace, those who do continue to work are predominately in occupations such as management, with high computer usage.

The proportion of elders in the workforce, however, is anticipated to increase in the future, and, with this increase will come a need to provide opportunities for updating of technology skills and learning new skills (see Charness, this issue), including e-learning venues specifically designed for the needs of the older learner.

Type of household. Computer use at work appears to spill over into use at home by one's family (U.S. Department of Commerce, 2002). The presence of someone in the household who uses a computer or the Internet at work is asso-

ciated with substantially higher computer ownership and use at home of the computer or the Internet (77 percent for those with work-related computer usage versus 35 percent for those with no work-related computer usage), with similar figures for people over age 55. Knowledge and use of computers is also associated with having members of the younger generation in the household (U.S. Department of Commerce, 2002). Family households with children under age 18 are more likely to use the Internet (62 percent) than family households with no children (53 percent). Nonfamily households, composed primarily of people living alone, have the lowest use of the Internet (35 percent). With increasing age, adults are less likely to live in households with the younger generation and more likely to live alone. Almost 40 percent of elders live in a nonfamily household—primarily living alone, particularly old-old women.

ENGAGEMENT OF ELDERS IN COMPUTER-BASED ACTIVITIES

A study by the U.S. Department of Commerce (2002) found that for the total U.S. population, the online activities most frequently engaged in were as follows: E-mail and instant messaging (45 percent of users engaged in this activity); product and information search (36 percent); search for news, weather, and sports (33 percent); product and service purchases (21 percent); on-line banking (8.1 percent), and employment search (7.5 percent). These online activities can be classified as either communication, information seeking, transactions, and entertainment and leisure.

Communication. On a typical day, older Internet users are more likely to send e-mail than the average Internet user. E-mail is the online activity that has most engaged senior citizens with the Internet (SeniorNet, 2004). Some 93 percent of wired elders have sent or read e-mail.

Information seeking. Information seeking is the area of online activities in which elder Internet users are most comparable to the general online population (Fox, 2001). Approximately 50 percent of online elders are getting news, weather, travel, product, political, and financial information online. While older people's use of the Internet to seek information is generally

positive, further examination of their behaviors suggests serious limitations in their use of effective Internet search skills. Training in more efficient Internet search skills should be a priority in technology courses for older learners. The limitations in search skills and the knowledge to interpret what is found are particularly significant when the subject of the search is health. More adults go online for medical advice on any given day than actually visit health professionals, and elder Internet users have been shown to be as likely to seek health information online as the general online population (53 percent of users versus 56 percent, respectively) (Fox, 2001).

Disease information, material about weight control, and facts about prescription drugs are the top interests among people of various ages who seek information about health. There are, however, some concerns regarding the public and in particular elders' use of online health information. Most health seekers go online without a definite research plan. They typically start with a search site, not a medical site, and visit two to five sites during an average visit. Many information seekers did not know that search engines may be paid to list sites in a prominent position (Fox and Rainie, 2000, 2002). Many older adults who seek health information are not careful to evaluate the credibility of online information (Fox and Rainie, 2000, 2002). Only one quarter of those who seek health information are vigilant about verifying a site's information, another quarter are concerned about the quality of the information they find but follow a more casual protocol, and half rely on their own common sense and rarely check the source of the information, the date when the information was posted, or a site's privacy policy. While 37 percent of young adult report always finding the information they were looking for, only 19 percent of those over 50 years of age report such a high rate of successful searches.

Transactions and shopping. Elders' willingness to engage in online transactions varies by type of transaction (Fox, 2001). The proportion of online elders seeking financial news (40 percent) is comparable to the general Internet population. Almost a quarter of online elders believe

the Internet has improved the way they take care of their personal finances. While online elders are comfortable managing online portfolios, they are less likely to deal with their bank accounts online (only 8 percent). For online elders, as well as the general population, online financial transactions are primarily conducted by men, those with incomes over \$50,000, and those who have been online for over three years. Age differences in online financial activities may be related to concerns about confidentiality (U.S. Department of Commerce, 2002). Only 36 percent of 25-year-olds were concerned about confidentiality, compared to 55 percent of those 55 years of age and older. Interestingly, confidentiality concerns did not vary by gender.

Entertainment and leisure activities. The second most popular online activity for elder Internet users is seeking information about hobbies or a pastime (Fox, 2001). However, the proportion of online elders seeking hobby information (60 percent) is smaller than among the general Internet population (76 percent).

One of the fastest growing online activities has been the use of government websites (Larsen and Rainie, 2002). Use of government websites varied markedly by age: 18–29 years (21 percent), 30–49 years (49 percent), 50–64 years (21 percent), 65-plus years (6 percent).

CHALLENGES FOR ELDERS IN E-LEARNING

For many reasons, including those outlined above, older people often lack the skills to utilize the Internet effectively. Much of the research on the learning needs of older adults can be applied to the various contexts for e-learning.

Training in computer skills. Research on the most effective training methods supports the importance of hierarchically organizing the information to be learned, proceeding in training from simple to more complex concepts and skills, and highlighting for the older learner the most salient information and skills to be acquired (Willis, 2004). (See Kaufman and Rockoff, this issue.)

Synchronous, asynchronous, and blended learning settings. In an online learning context, such as web-based learning, information can be delivered by several methods, including synchro-

nous, asynchronous, and blended settings (Willis, 2004). These settings differ in the amount of interactivity between the learner and instructor and among the learners. There are important implications for the older learner.

Asynchronous learning includes self-paced courses and asynchronously scheduled classes. Collaboration occurs over time. Interactivity between older participants and the instructor does not occur in real time, but rather occurs by means of threaded discussions and e-mails. In contrast, the synchronous model enables older students to see the teacher's presentation, as instruction occurs. While the teacher is presenting, students can often ask questions of both the teacher and fellow students. Videoconferencing is one example of a synchronous learning context.

An important difference between any form of e-learning and face-to-face instruction is that students communicate through speech, eye contact, facial gestures, and body language—all of which are particularly important for the elder learner who may have some sensory deficits. Both the trainer and students must learn somewhat different communication skills in a virtual classroom. Learners will need instruction in how to use features that foster interactivity, as well as instruction on course content. Thus, at least in the beginning of a synchronous learning experience, older learners will be learning how to interact and function in the virtual environment (that is, learning to use the technology), as well as mastering course content. This requirement for divided attention may be particularly challenging for elder learners. At the same time, elders may find having an instructor online less intimidating and they may appreciate being able to organize and pace the presentation to suit their own requirements. A drawback would be that the instructor may have a harder time diagnosing each learner's particular strengths and limitations in a virtual rather than a traditional classroom.

In short, prior research on education and older adults emphasizes the importance of structure, organization, and sequencing of information, and these findings can certainly be applied to training older adults to use technology. While older adults may take longer to learn computer

skills than younger people do, older adults can learn effective use of technology and utilize these skills in work settings.

SUMMARY

In this paper we have discussed the current and future role that technology can play in the learning activities of the elderly. Demographic trends suggest that current and future cohorts of elderly vary dramatically in their computer skills and activities. Only a minority of elders currently over age 65 are online; however, this small subset of elders are active users of technology. In contrast, the baby boomers, now in midlife and representing the future elders, are computer literate and active users of technology in their work and daily life. Current studies suggest that the baby boomers will remain in the workforce longer than current elders. Thus, a future challenge is continued training of the boomers in advances in technology as they age.

The two major online activities of the U.S. population in general and of older people are communication and information seeking. Elders who are online are as avid users of e-mail as are the general population. Likewise, older people are active seekers of information on the Internet. However, research on the search behaviors of older people suggests that there are serious limitations in their search skills that should be the target of training.

As to what that training should be like, a number of types of training, asynchronous and synchronous, for example, have advantages and disadvantages for the older learner. The main point is that given the aging of the large boomer cohorts, who are likely to remain in the workforce longer and rely on technology in more aspects of their lives, the need for increasing opportunities for online learning and training for older people is urgent. ☺

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