Breaking Digital Barriers:
Promoting a safe, productive online presence for senior citizens
Testimony submitted to the House CMT Subcommittee hearing
"Fighting Fraud Against the Elderly: An Update", October 23, 2015

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Summary. In today's world, technological change outpaces many people's ability to comprehend or trust it, let alone embrace it. It is vitally important that developers of technology for the elderly are grounded in the needs, experience, and capabilities of the people they seek to help. For the past four years, the *Breaking Digital Barriers* group at Michigan Technological University has organized and participated in an ongoing outreach program called *Online at the Library* that trains elderly residents of our rural community in digital literacy skills and exposes our students to the realities faced by digital non-natives. The attendees at our help sessions, having been left behind in earlier iterations of the technological revolution, exemplify the challenges facing the designers of tomorrow's technology. Through our experiences, we have identified recurring themes. Of these, the theme most germane to the current hearing is "anxiety vs. exploration": lacking appropriate grounding in the new technology, our senior patrons alternate between naïve trust and paralyzing suspicion, neither of which leads to comfortable, productive use. Our program addresses this problem by providing a safe place for learning among peers, interaction with mentors who model appropriate use, and developing a healthy balance between caution and exploration.

In this document, we briefly cover the motivation and background for our project, we offer real examples of seniors struggling with both the reality and the fear of online fraud, and we offer our program as a model for engagement with the elderly, helping them overcome their obstacles to online activity and close avenues for fraud.

Motivation. The Internet-fueled explosion of digital technology use in the late 20th century promised much for the elderly: a wealth of news and health information and the ability to stay in touch with distant friends and family, to name a few examples. To a great extent, these promises have been fulfilled, but at a certain cost: digital literacy is quickly moving from an attractive option to a necessity. In many cases, paying utility bills or performing certain bank transactions may only be available online. Keeping up with communication from one's local church, medical facilities, and contacts has become ever more difficult without the use of digital technology. The electronic tools they must use vary across platforms and over time, and traditional forms of learning are unavailable or inadequate. Even simple device-local tasks on PCs or tablets can be challenging, let alone the use of services through these devices.

When we design and build the technology to support an aging population staying at home, we need to consider it from a grounded perspective that takes into account the particular characteristics of this population. We need to acknowledge the barriers confronting them as they attempt to adopt more powerful, pervasive technology. We need to learn what knowledge and skills they have picked up earlier as users, and how it affects their adoption of new technology. Finally, we need to be realistic about the degree to which elders are willing to bring more pervasive technology into their lives.

Background. Since 2011, students at our university have been meeting weekly at the local public library with community members, most of them 60 years of age or older. This series of meetings, called "Online at the Library", provides one-on-one tutoring for people with questions about digital technology. Some participants are ordinary people who may have never used a computer but suddenly find themselves required to conduct online banking transactions or update electronic retirement information. Others may have used computers but have fallen out of practice. Still others need help transferring skills from PCs to new mobile devices. As we continue to move the technological bar, we are leaving these people behind. It is a moral imperative that we listen to their stories and address their needs as we develop the technologies of tomorrow.

Our Online at the Library experiences are colored by the particular character of our local area and our university. Michigan Tech is located in the far northwest corner of the U.S. State of Michigan, near the shore of Lake Superior. Our program precipitates some unlikely pairings: on one hand, local residents with long family ties to the area and varying levels of technological literacy; on the other hand, student tutors from around the globe, with extensive interest and experience in technology.

A copper boom in the 19th century brought wealth, industry, and a wide range of immigrants to this remote area. It also spurred the founding of Michigan College of Mines in 1885, later renamed Michigan Technological University. This mixture of mining, immigrants, and technology in a remote community has continued to shape the character of this area. By 1969, the last of the mines closed permanently; many of the villages and larger towns have shrunk drastically or even disappeared. The disappearance of mining jobs provoked flight from the area, primarily among younger people. The population of Houghton County has steadily decreased since the early 20th century – a decline of over 50% in the past century.

County residents over age 65 constitute over 15% of the population, 2% more than the U.S. average. Many of their relatives live far away, and those who stay struggle to get by in an economically depressed area with few jobs outside the university. In spite of the hard economic conditions, there is a strong sense of identification with the area among the elderly, and this along with financial constraints keeps many elderly in the area. Because of the larger than average number of elders without family support, many of whom are below the poverty limit, there is a strong need to help with digital literacy in this community.

Michigan Tech is a research-focused university with an emphasis on technology, engineering, and scientific degree programs. Students in the Computer Science, Cognitive & Learning Sciences and Humanities departments provide most of the help at Online at the Library. International students make up a sizeable portion of the graduate enrollment, and they are well represented at our help sessions: our tutors include Chinese, Indian and Nepalese nationals along with U.S. citizens.

Anxiety vs. exploration. The experience of using a computing device is well known to cause anxiety in elders, and our experiences bear this out. A common concern for computer owners in our group is that something they do will "break" their investment. Even routine activities cause anxiety as users fear accidentally going "off script".

Many learners are fearful of going online because of stories of fraud and identity theft they have heard in the media. Without a basis of understanding for how malware and other threats work, they have no model for how to minimize their threat level. Anything can be a

threat, so many learners fear using a computer altogether. One unfortunate consequence of this anxiety is the reluctance to explore. For newcomers to a software product or service, there is a vital form of learning that comes from exploration.

To complicate matters further, in practice it is often far from clear whether a user is a victim of true criminals or simply aggressive businesses pushing a product:

> *Mitch is a 60 year old recreational computer user. He runs a small service based local business. He paid a company hundreds of dollars because they convinced him, after many hours on the phone, that his business needed to be on prioritized search lists for Google and Bing. However, Mitch did not know what the service was or how it helped his business, how he could access his accounts with the service, or where he would be able to see the effects of the service. After several months, he attended as a participant in the library help sessions and described his experience. Tutors determined after a lot of exploring and calling the company that sold the service to him what the service does and explained to him what he had paid for. Mitch's business has no online presence and being a local business, being searchable as an advertisement on search engines does not help him.*

In this case, Mitch was not a victim of fraud or theft but paid a legitimate business to help him, without understanding the services he was paying for.

News coverage of malware and spyware, coupled with stories of privacy abuses by companies such as Google, have terrified our elderly learners:

> *Marsha explained in great detail that if she used an online calendar service it would be easier for her to manage her busy schedule but someone on the internet would be able to spy on her and know where she was. Her biggest fear was that Google was going to know where she was because her schedule would be online.*

In another case, a senior user was overly suspicious of a legitimate online service that may actually have saved her money:

> *Diane proudly announced that she had cancelled Amazon Prime. Evidently her husband had signed up for a trial membership and then was charged the yearly subscription price. She thought her husband had been tricked into paying for this online television service and that they were wasting money since they already had cable and don't watch anything online. She had no idea about the free shipping and it turns out that they are very frequent Amazon shoppers.*

Along with these stories of stifling anxiety, we see many cases of the opposite: senior users who trust too much. In the words of one tutor:

> *I often see older people at our sessions visiting sites I would call sketchy at best, or reading every email sent to them – because someone sent it to them, so it must be important. Often they attribute the email to an acquaintance or relative, even if it is junk mail or spam or a phishing attempt. I haven't seen anyone open a malware attachment, but I've had to help clean computers after people did so. In the real world, people are often less trusting or have simply learned to avoid the dodgy parts of town or throw away junk mail without reading it. Why don't these skills transfer?*

Online at the Library. Learners and tutors meet at the local public library every Friday morning. The library presents a less intimidating venue than the university computer labs, and it represents a link between familiar, traditional forms of literacy and the new digital literacy. Tutors assign themselves to learners on an as-needed basis. A typical session has around 10-15 learners and 6-8 tutors, so tutors often alternate between more than one learner. There are computers at the library available for our use, but many people come with their own computers.

The tutor and learner arrive at an informal set of goals and activities for the session. Tutors customize their approach to the perceived level of competency of their learners. Many learners attend the sessions regularly and continue working on issues from a previous session. Often the self-identified beginners work as a group separately with a tutor. At appropriate teaching moments, the tutors explain concepts to the learners to aid their understanding. We encourage learners to persist through challenging situations, keeping the amount of "steering" done by the tutors at a minimum. We also encourage tutors to articulate their own habits and approaches to working online, so that they can serve as a model for our senior learners.

Tutors, of course, constitute a learning community of their own. Students from Michigan Tech can join the tutoring team at any time. Upon entering the program, a process of legitimate peripheral participation ensures: new tutors watch experience ones in action, then team-teach with an experienced tutor or take on small-scale tasks until they achieve a level of comfort. Tutors contribute to a project blog, reporting their weekly interactions from which the stories in this paper derive. Our posts are essentially ethnographic studies that fill out the details about each learner with every weekly meeting. We are now at an interesting stage where some learners have expressed the confidence and willingness to "give back" and serve as tutors themselves.

In addition to the one-on-one tutoring sessions, we have offered occasional short courses on particular themes. Most relevant to this hearing is a course entitled "Staying Safe Online". Attendees are presented with examples of fraudulent email material side by side with traditional physical junk mail. The course attempts to tap into seniors' intuitions about traditional forms of communication, encouraging them to maintain a similar skepticism about electronic correspondence.

Conclusion. It is clear that basic literacy in secure online behavior is an essential weapon in "Fighting Fraud against the Elderly". We believe that Online at the Library serves as an effective and replicable learning model:

- A safe place for learning, asking potentially embarrassing questions, and gaining strength from seeing peers in the same position.
- Personal contact with mentors who can model appropriate behavior and attitudes.
- Development of healthy online behavior, finding a balance that keeps seniors safe without stifling their creativity and productive energy.

This program has served over 80 local residents and engaged 40 students as tutors. The BDB team has developed graduate courses on digital literacy, accessibility and usability design for older users. BDB members are developing a socio-technological approach to help older learners with "wayfinding" strategies for navigation within web applications. This approach involves small interactive group learning activities along with software tools for

annotation of web navigation. Over the next two years, BDB will help build similar learning programs, using our techniques, in the central and eastern regions of the Upper Peninsula. The goal by 2017 is to have 200 older learners, 100 student tutors, and a tested program to serve as a national model. More information can be found at the Breaking Digital Barriers website: http://mtu.edu/bdb