Educating Senior Citizens on the Evolving Digital Landscape

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Introduction:

The radical integration of technology in society throughout recent decades has entirely changed how people function. Nearly every person uses technology for communication, data retrieval and storage, and entertainment on a daily basis. Technology can greatly enhance efficiency for those who know how to use it, but for certain demographics, this technological uprising introduces risk and confusion rather than functionality. This paper will focus specifically on the problems introduced by technology to the elderly population aged 60 years or older, while also identifying potential solutions that can aid senior citizens in better understanding the rapidly evolving digital landscape. One goal of this research is to better understand how the evolution of Windows technology has stunted the elderly population's drive to learn fundamental concepts associated with technology. Further, detail will be given to identify the specific cyber threats this demographic is most susceptible to, with consideration given to the inherent vulnerabilities that cause them to be more at risk compared to other groups of people. Lastly, this research aims to provide methods for educating senior citizens on becoming more digitally literate and aware of the underlying threats associated with online activity.

Overview of Research:

Understanding the struggles faced by elderly populations when using technology requires attention put toward the rapid innovation experienced within the tech sector, primarily since the introduction of the World Wide Web in the 90s. Older generations did not experience the use of technology throughout their early childhood and adolescent years the same way that younger generations have been able to with ease of access to the Internet. Therefore, senior citizens are more prone to believe that the integration of technology in public and private sectors is not

necessary. However, with the level and rate that technology has been integrated into modern society, younger generations would argue that technology is the backbone of the world we live in (transportation, communication, education, banking, etc…), making it entirely essential to function in life. This lack of familiarity with modern devices and fundamental concepts related to technology contributes to the discouragement of elderly populations when it comes to using modern tools.

Further, as people age their cognitive ability and senses decline, imposing a steeper learning curve for senior generations when tasked with educating themselves on technology use (Rathor et al., 2025). This is another deterrent for learning how to navigate digital systems because elderly populations require extra time, effort, and assistance to account for their reduction in mental fortitude. The fact that technology continues to evolve rapidly does not cater well to this demographic either. Every year, new products and innovations are introduced to the market. This creates a very dynamic learning environment, requiring a constant understanding of the newest technology and the associated vulnerabilities and threats that come with these products. For these reasons, senior citizens struggle to keep up with the rate of innovation experienced within the tech sector, and they can be easily taken advantage of by threat actors.

Methodology:

To acquire a more comprehensive understanding of this topic, a literature review was conducted of various websites and scholarly journals to obtain statistics relating to elderly populations' experience with cyber attacks, their understanding of Windows systems, and methods that can be taken to properly educate them on how to improve digital literacy. The articles under examination primarily conducted mixed research methods to aggregate their data on senior citizens and technology use/experience.

Results:

The results of this literature review revealed that older generations are considered the "fastest growing population among Internet users" (Nicholson et al., 2021). This can be directly linked to the ease of access that technology provides for everyday essentials, such as communication and banking; however, the lack of knowledge this population has pertaining to online systems places them in a vulnerable position compared to other demographics (Nicholson et al., 2021). Rathor et al. (2025) state that 76% of elderly people now own a smartphone and 88% actively use the Internet, yet, their online susceptibility stems from an inherent trust in the systems they use coupled with a reliance on devices to access and manage modern day resources. Additionally, a lack of technical skills allows for older generations to have trouble distinguishing between malicious and legitimate sources of data, causing them to utilize outdated or untrustworthy software or online services (Rathor et al., 2025). The trusting nature and lack of technological saviness held by this demographic makes them a primary target for cyber criminals.

Next, let's consider the certain online attacks that senior citizens are most likely to fall victim to. As aforementioned, older people are more prone to be trusting of online sources and data because of their inexperience relating to digital systems and being accustomed to physical interactions, where it can be easier to identify the trustworthiness of a source. Continuing on, elderly populations typically have higher monetary savings that have accrued throughout the expanse of their lives. Threat actors are aware of these factors and they predominantly aim to exploit seniors through social engineering tactics such as phishing messages, impersonation fraud, and various other types of scams (Rathor et al., 2025). Statistics gathered from the FBI's Internet Crime Complaint Center (IC3) reveal that in 2025, over $7.7 billion in known losses was

experienced by individuals aged over 60 years; this was nearly a 60% increase in losses compared to the prior year (2025 IC3, 2026).

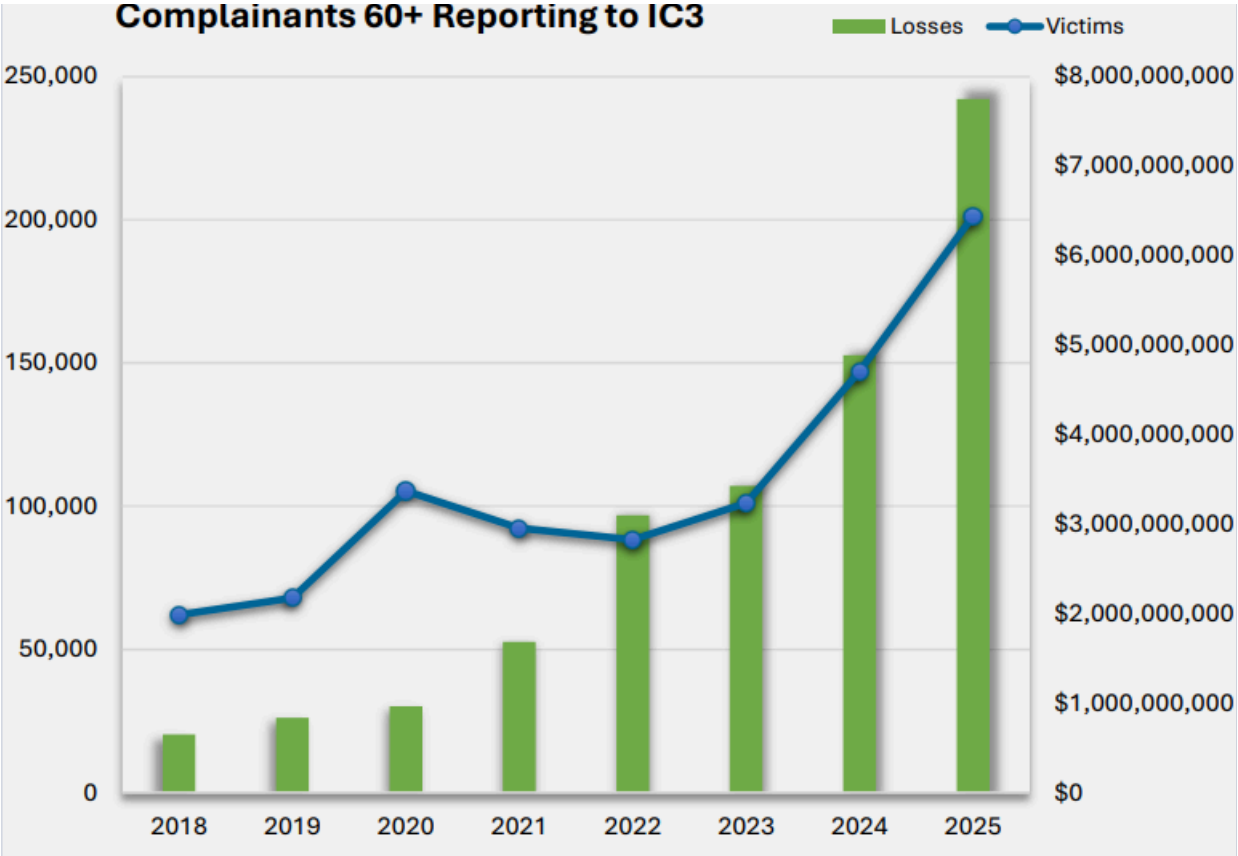

Figure 1: Complainants 60+ Reporting to IC3

Source: 2025 IC3 Annual Report

According to the 2025 IC3 annual report (2026), phishing attacks, tech/customer support scams, and investment scams were among the most prevalent attacks experienced by elderly populations in 2025, closely followed by government impersonation and credit card/check fraud attacks. These statistics indicate the serious online dangers this demographic faces. As the number of senior citizens incorporating Internet usage into their lives increases, the amount of stolen funds elevates as well. Statistics of this nature highlight the urgency that should be taken to aid older

generations in preventing serious financial, emotional, and mental casualties that result from cyber attacks.

Another takeaway from this literature review relates to the evolution of Windows products and how the changes made within these systems have stunted older generations' desire to adopt and educate themselves on this technology. It is widely known that Microsoft Windows is the dominant operating system (OS) used for computing devices, holding around a 72% share of the global computer and laptop OS market. Since its inception, Windows has gone through over 15 major updated versions (Arcticsledge, 2026). Throughout each of these versions, there have been great innovations made, and earlier versions could be considered entirely unrecognizable compared to more recent versions in terms of interface composition and system navigation. For example, someone who became accustomed to using Windows 95 and hasn't owned a computer since the late 90s would have a difficult time transitioning over to modern day Windows 11. The changes made between the two of these versions are drastic, and for a senior citizen it might look like an entirely foreign system and can seem hopeless to understand how to use this new version. This is common for most types of technology as changes are required to account for the latest innovations, however, they are not always implemented in a straightforward manner. Another example of evolving technology that created confusion for older individuals could be the changes made to Microsoft Office in 2007. At the time, Microsoft Office entirely remodeled its interface to incorporate new organizational advantages, but older users experienced issues adapting to these new changes, and they referred to this shift as an inconsistent organizational pattern (Darejeh & Singh, 2014). According to Vaportzis et al. (2017), a major barrier for older generations utilizing new technology is a lack of clear, understandable instructions that guide them on how to properly operate the device or software

with little to no prior knowledge. For new devices that run an updated Windows OS, it can be difficult for elderly users with no technology experience to understand the setup instructions provided through a help page or device manual. Therefore, the constant updates and changes experienced by Windows OS could be undesirable for senior generations and turn them away entirely from the idea of learning how to effectively use the associated technology.

Providing a solution to compensate for the online struggles experienced by the elderly demographic could be subjective depending on the circumstances and preferences of individual senior citizens; there is not one overwhelming solution to account for the problem of educating this group on device operation and digital literacy. Strathmann (2025) suggests that one foundation for this task would be to strengthen the critical thinking skills of the elderly population. This could involve solving puzzles, reading an array of material, and participating in thought provoking conversation on a regular basis. Additionally, it was found to be helpful to educate any caregiver, if present for the senior citizen, on data and technology use because they have a significant influence over the individual they care for (Strathmann, 2025). For seniors that live alone, it might be difficult to find someone they can trust for a proper education on cyber hygiene and device use. Some younger relatives of elderly generations might consider it burdensome to provide a thoughtful education on how to operate technology. It's not uncommon for younger generations to see navigating a computer as "common sense," and they might lack the patience to provide detailed assistance to elders (Vaportzis et al., 2017). An alternative solution introduced by Nicholson et al. (2021) involves integrating trained cybersecurity advocates within senior communities to educate individuals through training sessions on topics such as password management, updating software, identifying scams and much more. Trained personnel would be better suited to educate others on the topic of digital literacy and safe online

activity, and they would be able to more effectively assess and understand what methods to use for training seniors that would best compensate for their level of skill and knowledge. On the other hand, the way that technology is developed could be changed to accommodate unknowledgeable or vulnerable groups of people. As Boles (2025) states, “new technologies are developed by quite young people for other young people.” By broadening the intended consumer base of new products to include the rapidly growing population of elderly online users, a safer digital realm can be fostered where people don’t have to neglect using technology. New products can be made specifically for the elderly demographic that include user-friendly software, guided tutorials, and pre-installed antivirus software (Rathor et al., 2025). Investing in the development of technology that accommodates vulnerable senior citizens and incorporating cybersecurity training centers in the residential areas of elderly people would be highly valuable methods of keeping this population safe and aware of their online actions.

Conclusion:

To conclude, as the world continues to become increasingly digitized, it should be a priority to assist the senior demographic due to their high risk of cyber attack victimization and uphill battle of understanding appropriate device usage. Technology will only continue to grow, and, likewise, cybercriminals will also continue to advance their skill set and tactics used for taking advantage of vulnerable people and systems. Considering the skyrocketing of financial loss documented in the IC3 report, it’s likely that this value will continue to climb from year to year. Therefore, it’s critical that governments, businesses, and individuals with the knowledge and tools to help older populations take the initiative to spread helpful information and make technology use for seniors less risky and more comprehensible.

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