

Chapter 6

Design for Aging: Enhancing Everyday Technology Use

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ABSTRACT

Modern technology incorporates a wide range of digital technologies, including those created specifically for everyday tasks typically operated in stand-alone mode. Yet, innovations in mobile technologies and the Internet influence design and adoption of these everyday technologies by introducing new interaction techniques and by providing access to information and people that facilitate effective use. This chapter describes best practices and challenges for enabling older adults to adopt everyday technologies transformed by technology innovations. First, the authors define everyday technologies and known factors influencing successful use including environmental support and context of use. Then, they discuss issues and challenges of design for everyday technologies and summarize the factors that influence everyday technology use in a conceptual diagram. The authors also present recommendations for specific constituents that may improve technology adoption by older adults. Lastly, they discuss future opportunities for enhancing everyday technology use with good design, useful support, and appropriate innovations.

INTRODUCTION

Modern technology incorporates a wide range of digital products that are used by older adults to satisfy many needs and wants. We have found that older adults use technologies that vary in

levels of technological sophistication and ease of use (O'Brien, 2010; Olson, O'Brien, Rogers, & Charness, 2011). Some products are well designed to facilitate first-time use with little effort; others require significant effort, prior knowledge, and environmental support to achieve a goal. As we assessed the basis for successful use among older adults, we noted that older adults frequently apply

DOI: 10.4018/978-1-4666-1966-1.ch006

their lifetime of experience completing everyday tasks and resolving problems to their use of modern technologies. Thus, older adults can usually function well in technologically enabled communities in spite of generally lower experience with modern technologies compared to younger adults.

Researchers interested in helping older adults adopt new technologies can learn effective design practices from the successes and problems older adults encounter with everyday technologies for which some prior knowledge of the task goal or procedure is typically available. Although many modern technologies are used for everyday tasks, this chapter will focus on technologies other than Internet and Communications Technologies (ICT). We opted for this approach because other technologies are more likely to have been used in familiar contexts such as the home in which older adults initially learned specific tasks and general everyday problem-solving skills. In these familiar contexts, older adults often learned relevant strategies, domain knowledge, environmental cues, and sources of support that facilitate success across a range of tasks. Older adults combine their prior knowledge of these components and relevant technologies to the use of new everyday technologies.

In this chapter, we first present an overview of everyday technology use by older adults and factors that affect successful use. Then, we discuss challenges for designing everyday technologies with a focus on prior knowledge issues because the diversity of prior knowledge among older adults is particularly problematic for everyday technology design. This focus is highlighted in a conceptual diagram of factors influencing everyday technology use with prior knowledge at the center. We then propose solutions for different constituent groups to increase everyday technology adoption. Lastly, we discuss future research needs and opportunities for improving the design of everyday technologies and related instructional support.

BACKGROUND

Everyday technologies are characterized by the tasks they enable and the way in which they are first used. Everyday tasks occur in naturalistic environments during the ordinary activities of a target population, even if they are not conducted every day (Sinnott & Cook, 1989). For older adults, these everyday tasks have been generally specified as Activities of Daily Living (e.g., bathing, eating; Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963); Instrumental Activities of Daily Living (e.g., managing medication, preparing meals; Lawton, 1990), and Enhanced Activities of Daily Living (e.g., communicating with family and friends, hobbies; Rogers, Meyer, Walker, & Fisk, 1998). Everyday technologies are typically used with little formal training or instruction.

The International Standards Organization (2006) recommended several practices for designers to follow in developing effective everyday technologies in the ISO 20282-1 standard, entitled “Ease of Operation of Everyday Products.” In this section, we review research about these factors pertinent to older adults by describing potential sources of knowledge for using new technologies and contextual factors of use.

Everyday Technology Repertoire

ISO 20282-1 (International Standards Organization, 2006) prescribed that designers understand the “knowledge of comparable machines” for target users as a baseline for new technologies. No template for determining this knowledge was given. We examined several common approaches to estimate this repertoire of everyday technologies for a “typical” older adult. One method for estimating knowledge is large-scale surveys of representative users about their experience with technologies such as those developed by the Pew Research Center (e.g., Zickuhr, 2011). This approach is limited to describing a population’s

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