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SAN FRANCISCO HUMAN SERVICES AGENCY
Department of Disability and Aging Services

Comprehensive Exploration of Factors Impacting Older Adults' Digital Learning

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Introduction

"Why do older adults exhibit varying learning outcomes following training, even within the same class?"

"What accounts for the disparities in results among these learners?"

This paper aims to address these questions by investigating influential factors in digital literacy training among older adults (ages 65 and up). Although digital training and education programs are recognized as one of the principal strategies to reduce digital inequality, empirical evidence of the determinants of digital learning remains largely absent. Specifically, there is a lack of practical understanding of the underlying causes behind the diverse patterns and outcomes observed in digital literacy education for older adults.

To design more effective and beneficial digital skills training and education programs for older adults, it is crucial to have a comprehensive understanding of the multifaceted influences on this group's digital learning. As such, the primary objective of this white paper is to investigate the diverse factors that have an impact on learning within digital literacy training strategies for older adults, drawing examples and data from the Home Connect program developed by the nonprofit, Community Tech Network (CTN). We aim to reveal some of the intricacies of older adults' digital learning practices and pave the way for more informed and effective digital education strategies.

Background: Home Connect Program

In today's digitally transformed society, older adults have emerged as a group which consistently faces significant challenges in obtaining the digital skills needed to confidently, safely, and independently access the internet. Yet, digital literacy proficiency is a crucial determinant of overall digital inclusion, which underscores the critical importance of providing effective digital literacy education and training programs for older adults, especially those who are low-income, disabled, and non-English-speaking.

In response to this pressing need, CTN launched 'Home Connect,' which provides personalized, one-on-one, virtual digital learning lessons for older adults in eight languages (English, Spanish, Russian, Tagalog, Korean, Vietnamese, Mandarin and Cantonese). This program was initiated in March 2020, during the height of the COVID-19 lockdown, and to date it has successfully engaged 982 people, all aged 60 and above, residing in the City and County of San Francisco.

The Home Connect program provides a series of five, one-hour virtual training sessions in the language of the learner's choice, expertly guided by experienced instructors. Learners also receive free tablets, 45 days of internet data, and instruction booklets that provide ongoing digital support. Because the service is designed for completely unconnected learners, training modules focus on fundamental digital literacy skills, such as navigating basic features of the tablets, conducting effective internet searches, mastering email communication, understanding essential online safety practices, and utilizing the camera functions. Upon successful completion of the initial training, learners have the opportunity to continue their digital learning journey through ongoing weekly virtual Q&A sessions facilitated by instructors and dedicated volunteers in Cantonese, Mandarin, Spanish or English. The drop-in Q&A sessions are

designed to provide continuous support and enrichment, allowing older adult learners to further enhance their digital skills and explore an array of practical applications.

Differences in Digital Literacy Skill Utilization among Older Adult Learners in the Home Connect Program

As the first phase of this research, CTN began to investigate how digital literacy skill utilization among older adult learners differed during and after the Home Connect program. This involved a series of surveys conducted at three distinct stages of the program: a pre-program survey, an immediate post-program survey, and a six-month follow-up survey after completion of the program. These surveys assessed the outcomes of participants' digital learning journeys.

Subsequently, we can categorize the older adults into four groups based on the development of their digital literacy skills from the beginning of the Home Connect program when compared to their six-month post-training surveys: 'Growing,' 'Initially Growing but Not Sustaining,' 'Non-changing,' and 'Decreasing.' Each group describes a unique pattern of digital literacy skill development among the older adult learners.

Notably, our findings revealed that 63.1% of the learners belonged to the 'Growing Group,' which consists of learners who showed consistent improvement in their digital literacy skills throughout, and after, the training program. The 'Initially Growing but Not Sustaining Group,' representing 8.4% of the learners, initially demonstrated progress in their digital literacy skills but failed to sustain or further enhance their skills over time. The 'Non-changing Group', comprising 15.4% of the participants, did not significantly improve during the training program. The 'Decreasing Group', accounting for 12.8% of learners, experienced a decline in their digital literacy skills over time.

Table 1 Categorized Group Result

Group	N	Percent (%)
A (Growing Group)	173	63.1
B (Initially-Growing Group)	23	8.4
C (Non-Changing Group)	42	15.3
D (Decreasing Group)	35	12.8
Total	274	100.0

These disparate learning patterns among the learners prompt critical questions: what factors underlie these variations in learning outcomes, and how do they impact the process of digital literacy development? An in-depth exploration of these inquiries may unravel the multifaceted factors that influence the digital learning experiences of older adults.

Overview of Findings and Key Insights

Through surveys and interviews with learners, we gained valuable insights into the factors that influence the digital learning outcomes of older adults. We conducted detailed, multiple linear regression analysis with survey data collected from 274 older adult learners in the Home Connect program. This analysis examined the impact of various variables, including gender, ethnicity, income, age, previous digital skill, and internet usage on digital learning. The assessment of individuals' learning outcomes was based on their digital literacy skills as measured in the post- and follow-up surveys, which were conducted after the competition of the Home Connect program.

Furthermore, we explored additional factors by conducting qualitative interviews with 21 Home Connect learners. These interviews investigated other aspects such as prior learning experience, interest and motivation, health condition, available support systems and community, as well as perspectives on aging and digitalization.

Previous Digital Skills

The multiple regression analysis revealed that only 'Previous digital skill' (Beta=.495, p<.001) had a significant positive impact on the learners' digital learning outcomes. In other words, it was evaluated that higher levels of digital skill prior to attending the Home Connect program led to higher digital learning outcomes. Interestingly, unlike in current discussions and studies of the digital divide, positional factors such as gender, ethnicity, income, and age did not statistically influence digital learning outcomes in this study.

Table 1 Multiple Linear Regression Analysis Result

Dependent Variable	Independent Variable	B	S.E.	Beta	t	p	VIP
Digital Learning Outcomes	(Constant)	6.805	1.657		4.107	<.001	
	Gender	-.205	.240	-.050	-.852	.395	1.015
	Ethnicity	.031	.114	.016	.274	.784	1.036
	Income	-.030	.203	-.009	-.146	.884	1.100
	Age	-.023	.017	-.080	-1.334	.183	1.068
	Previous Digital Skill	.419	.052	.495	8.029***	<.001	1.124
	Internet Usage	.052	.119	.027	.435	.664	1.106

F=13.405*** (p<.001), R Square = .271, adjusted R Square = .251, D-W=1.841
*p<.05, **p<.01, ***p<.001

Previous Learning Experience

Some of the learners had acquired knowledge about the practical, basic functions of digital devices, such as smartphones and laptops, through instruction from their children or community-based classes before joining the Home Connect program, and their previous digital learning exposure helped their new digital learning.

In fact, one interviewee shared that he was exposed to technology early-on in his job, which facilitated his willingness to learn more about digital devices. He feels that he learned how to use smartphones out of necessity. The previous learning and exposure experiences with technology have helped him feel more at ease and familiar with new digital learning.

Interest and Motivation

Unlike many current studies which emphasize interest and motivation as critical factors in learning outcomes, this study revealed that individuals' concerns and worries about their learning abilities are more impactful factors in their digital learning. Even among the learners who showed positive attitudes towards learning new things, they also mentioned concerns about their ability to learn effectively. One woman expressed worry about making mistakes when learning new technology due to her limited current digital knowledge and skills. Another participant expressed the importance of psychological factors in his learning process, stating:

"It is crucial to feel capable of asking for help and not feel incapable of learning…" Psychological factors, such as self-doubt and apprehension, played a significant role in developing and sustaining digital literacy skills.

Health Conditions

A considerable number of the participants in this study reported that they have health issues related to hearing, vision, mobility, and memory. Despite facing challenges due to their health conditions, many of them did not believe that their learning was significantly affected. The participants acknowledged feeling uncomfortable when learning, but they did not perceive a substantial impact on the learning process itself stemming from their health conditions.

"I don't think my hearing loss affects my daily life or learning things too much."

"I have back pain due to osteoporosis. I can't sit or stand too long. But it doesn't affect my learning."

Scaffolding and Community

The majority of the interviewees mentioned family members, social workers, and neighbors as their primary sources of support in resolving digital device-related issues. This highlights the importance of a strong support system from others in ensuring consistent and effective digital learning for older adults.

One interviewee, who stated that she does not receive anyone's help in using digital devices, actively participates in CTN's drop-in, online Q&A sessions on a regular basis. She enjoys and gains valuable insights by listening to others' questions and answers during the sessions.

*"I attend CTN's Q&A sessions on Zoom. But I probably need more one-on-one help. I cannot articulate my questions well so sometimes it's hard for the instructors to answer my questions on the Q&A. **I enjoy the Q&As because I can listen to other people's questions and get the answers. I still learn a lot that way."***

Her statement underscores the significance of external support and interactions with others in sustaining ongoing digital learning. Additionally, it highlights the important role that CTN's Q&A services play in supporting continuous learning of the learner community.

Perspectives on Aging

Most older adults view the concept of 'being old' as natural, and it does not hinder their willingness to pursue continuous learning. However, some participants also acknowledged the physical and mental degeneration that may accompany aging as another aspect of 'being old,' and they make efforts to overcome these difficulties. This demonstrates that while the older adults themselves do not perceive 'being old' as a negative influence on their learning, they recognize certain age-related symptoms as negative factors that should be addressed and improved, especially in learning.

Perspectives on Digitalization

The learners expressed positive opinions regarding the rapid and continuous development of technology. They demonstrated an open-minded approach to learning new technologies and exhibited both the necessity and willingness to continually learn, even when faced with the challenge of catching up with fast-paced advancements. Notably, some participants cited their desire for increased independence as a driving force behind their eagerness to embrace and adapt to new technologies.

Conclusion

This white paper unveils diverse influential factors in older adults' digital learning journeys. It reveals that prior digital skills and experiences significantly contribute to positive digital learning outcomes. Conversely, motivation, interest, and health conditions were not found to exert significant influence on their digital learning. Instead, the older adults' psychological attributes, such as resilience, self-efficacy, and determination, emerged as pivotal factors in overcoming challenges associated with aging and positively shaping their digital learning experiences. Furthermore, the presence of social support and regular interactions with peers and community members played a crucial role in nurturing their consistent and positive digital learning experiences. Additionally, sociocultural aspects, such as perspectives on aging and the digitalized society, influence older adults' attitudes toward learning digital skills, and they can unavoidably affect their digital outcomes.

Drawing from the insights and findings of this study, CTN offers several recommendations for the future of the digital literacy learning for older adults:

1. Recognition of Prior Digital Experiences: It is imperative for older adults' digital learning programs to recognize and assess their prior technology experiences. Tailored support that builds upon their existing knowledge and skills can optimize their learning outcomes by connecting new information to their existing experiences.

2. Understanding Older Adults' Unique Challenges: The first step in designing effective and supportive learning environments for older adults is understanding the unique challenges they may encounter in adopting digital learning. Addressing potential psychological factors, such as fear of mistakes or perceived limitations, is crucial to fostering proactive engagement in digital learning. Moreover, focusing on factors like resilience and self-efficacy can help older adults adapt and succeed in

their digital learning despite health-related difficulties.

3. Providing Diverse Resources and Social Interactions: It is essential to provide a diverse range of resources and social interactions to further enrich older adults' learning experiences. External support and interactions with others play a pivotal role in helping older adults overcome challenges in digital learning. The presence of a learning community (e.g., CTN's Q&A sessions) provides a consistent and reliable source of support throughout individuals' digital learning journey.

4. Embracing Aging Positively: To counteract negative perceptions of aging in society, it is crucial to socially embrace and accept age-related issues as natural phenomena. This fosters a more supportive and inclusive environment for older adults engaging in digital skill development.

5. Fostering Positive Perspectives on Digitalization: Ongoing advancements in technology should create an environment that encourages older adults to embrace digitalization with a positive attitude. Positive perspectives and responses to the digitalized society inspire older adults to continually enhance their digital skills, contributing to overall digital learning outcomes.

Understanding these influential factors provides valuable guidance for developing targeted interventions and inclusive digital literacy programs that empower older adults to thrive in the digital world.