November 2020 through June 2022

University of Rhode Island Engaging Generations Cyber-Seniors digiAGE Pilot

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Executive Summary

The Office of Healthy Aging (OHA) funded the University of Rhode Island (URI) to implement and evaluate a pilot program that provided iPads, internet connection through Hotspots (if needed) for one year, and technology support to diverse older adults from communities hit hardest by COVID-19. URI partnered with five community organizations to recruit and support English- and Spanish-speaking older adults 50 years of age and older (age range: 54-100). University students provided technology training through individualized phone calls, Zoom meetings, or in-person appointments (once possible). Optional weekly Zoom meetings shared technology and community resource information while also creating community with participants. Older participants were asked to meet their assigned student mentor regularly for 2-3 months and complete pre/post surveys as well as phone interviews in order to keep their iPad and retain internet connection through the year.

Methods

We used a combination of formative and summative evaluation research techniques using mixed methods when implementing this program. To answer our summative research questions, we conducted pre-surveys over the phone with each participant prior to receiving any of the program elements, and we conducted post-surveys after participants completed the program with an interview that included open-ended questions. All aspects of the research protocol were IRB-approved throughout URI.

Findings

Between January and December 2021, 272 people showed interest in the program, and 167 participants (average age: 72.3) completed the pre-survey and received their devices, with 80 receiving a Hotspot for internet connection. The participants were diverse regarding racial/ethnic groups. The program participants have shown statistically significant improvements from pre- to post-survey in digital competence, technology use, quality of life, social isolation, loneliness, and depression. We identified the following themes related to how the program has helped participants feel more connected within their environment and improve their health: 1) Improved feelings of well-being and overall health; 2) Increased contact with family and friends; 3) Offered new connections to the community.

Lessons Learned

1. The program has contributed to increased technology use, digital competence, and quality of life & reduced social isolation and loneliness for participants.
2. Community/university partnerships in Rhode Island can be effective and supportive.
3. The program must consistently work to balance all stakeholder needs.
4. We strongly believe that we have created a robust student experiential education experience through this program that involves recruitment, training, and ongoing support.
5. Senior/community center partnerships work well for recruiting and supporting older adults.
6. The research methods and processes have proven to be effective and sustainable.
7. We began rolling out the program state-wide in January of 2022, and we are continuing to gain momentum.

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Background

Project Overview

Funded primarily through the Rhode Island Office of Healthy Aging as part of the digiAGE Initiative, the University of Rhode Island (URI) team implemented a pilot program that aimed to bridge the digital divide between older adults and younger generations (referred to throughout the report as the iPad pilot program). The goal for this pilot initiative was for 200 older Rhode Islanders to become digitally literate by engaging them in a formal program that provides digital devices (i.e., Apple iPads), connectivity (i.e., internet connection through HotSpots), and training by supervised university student mentors. This project specifically promoted social and economic equity by targeting participants from lower-income communities and areas hit hardest by the COVID-19 pandemic for recruitment. Training and materials were provided in both English and Spanish for participants. The project developed a binder of materials and checklists for using devices, setting up email, using social media, and other technical needs written. Last, this project created a peer mentor (train-the-trainer) curriculum to use with older adults, where the plan is for selected older adult participants to be trained as peer technology mentors to support other digiAGE initiatives.

The project supported the University of Rhode Island (URI) Engaging Generations Cyber-Seniors program (referred to as the URI Cyber-Seniors program) as a valuable student intergenerational service-learning opportunity. This pilot project aimed to increase digital inclusion for older adults in Rhode Island and to increase older participants' quality of life by promoting life enrichment, independence, access to healthcare, and social and intergenerational connections. As a final product for the project, this report includes project details and outcomes information from the pilot for key state/community stakeholders. We also plan to submit a manuscript for publication to an academic journal based on program outcomes and findings.

Of importance to the Cyber-Seniors program and this pilot project, was the creation of an updated website for the program. Beginning in November 2021, this first initiative was implemented by Kristin Souza, Dr. Leedahl, and URI College of Health Sciences Senior Information Technologist, Dan Cruger. Having this updated website was key to ensuring accurate, consistent messaging for student mentors, older adults, and community partners involved in the program and this project. Please see the website here:
https://web.uri.edu/human-development/outreach-and-research/cyber-seniors/

Funding from the Rhode Island Office of Healthy Aging was made possible by the Coronavirus Aid, Relief, and Economic Security (CARES) Act. This pilot project was also possible due to funding

from the Blue Cross Blue Shield of Rhode Island Community Health Fund and the URI College of Health Science.

Program History

The University of Rhode Island (URI) Engaging Generations Cyber-Seniors Program is an intergenerational program that serves to teach older adults about technology and positively influence attitudes toward technology, digital use, and digital competence. The program uses reverse mentoring and a service-learning approach, where university students help older adults learn about technology for experiential education, while developing communication and leadership skills. This program is novel because most interventions helping older adults learn how to use technology do so in group settings, but research indicates older adults want to learn about technology through personalized one-on-one sessions (Betts et al., 2019). Since its launch in 2016 through the Spring 2022 semester, the program has served 1,468 older adults in Rhode Island with 356 URI students providing 6,280 hours of assistance.

The URI Engaging Generations Cyber-Seniors Program began in 2015 when an interdisciplinary group of faculty members became inspired to connect university students and older adults using the reverse-mentoring model after viewing the Cyber-Seniors ® documentary (Rusnack & Cassaday, 2014). The documentary highlights a program in Canada that connected high school students and older adults at a retirement community so that the older adults could learn about using technology. With URI's program, university students work together with older adults to help them learn about technology, and students gain communication and teaching skills. The program integrates service-learning components into existing courses/ curricula within multiple majors and programs; develops University partnerships with community organizations providing services to older adults; and collects quantitative and qualitative information for program evaluation and research.

The objectives of the URI Cyber-Seniors program are to: 1) promote civic engagement and service-learning for university students, 2) help prepare health and human service professionals for careers in an aging society, and 3) improve social connectedness and enhance technology skills for older adults in Rhode Island. The program helps to prepare future health and human service professionals to work with older adults (American Society of Consultant Pharmacists, 2015; Gerontological Society of America, 2012). In addition, key concepts in gerontology and life-course theory are introduced, offering students genuine interactions with older adults (Murakami, Lund, Wright, & Stephenson, 2003). While supporting university student needs, the program is also designed to benefit older adults in Rhode Island, specifically by improving social connectedness for older adults and thus influencing outcomes related to health and well-being.

Prior to implementing this pilot project, the URI Engaging Generations Cyber-Seniors team had a strong history of implementing intergenerational technology programming in Rhode Island, and the team also published five manuscripts about their efforts in developing and implementing this program and examining the outcomes for students and older adults (Breck et al., 2018; Leedahl et al., 2019; Leedahl et al., 2020; LoBuono et al., 2019). Two Master's students completed their theses in examining the social and technological benefits of the program for older adults (Serrano, 2018) and understanding the relationship between student personality and attitudes towards older adults (Marzban, 2019). Dr. Leedahl continuously works to include doctoral, Master's, and undergraduate students on projects and publications whenever possible, providing them co-author and first author opportunities. Prior to the pandemic, in a typical semester, we often worked with 5-8 organizations (mostly senior centers) and included approximately 10 university students who conducted in-person sessions with older adults. Older adult participants would bring their own devices to one-on-one or small group appointments with URI student mentors at senior centers or other community sites.

When the lockdown due to the COVID-19 pandemic occurred in March 2020, most senior/community centers closed, and URI classes and internships moved to remote experiences. Having researched and witnessed the negative effects of social isolation for older adults, the Rhode Island Age-Friendly coalition convened a weekly workgroup, called the Social Isolation Workgroup, focused on understanding the new landscape and working collectively to reduce social isolation among older adults by pooling knowledge, resources, and abilities. A recently accepted publication details the events and partnerships during this time (Jarrott et al., 2022). The weekly workgroup meetings consisted of scheduled speakers to help members learn what organizations and groups were doing across the state, updates from members on ongoing or upcoming activities/initiatives, and discussion around joint program ideas or additional partners to contact to aid with various ideas. Maureen Maigret, Dr. Leedahl, staff from OHA, and other key partners from across Rhode Island were early members of this group. Maureen Maigret was instrumental in connecting Dr. Leedahl with OHA, and OHA was able to identify the funding mechanisms that could be used to fund this pilot project as one of the signature projects for the OHA digiAGE Initiative.

Connection to the Literature

Technology Adoption Among Older Adults

Technology use has become a fundamental aspect of society, with work, education, communication, leisure, healthcare, and health promotion activities all utilizing technology in some way in order for people to fully participate. Although technology is becoming embedded in society, older adults are adapting to technology at a slower rate compared to younger individuals (Anderson & Perrin, 2017). For instance, 90% of all American adults have used the internet; however, only 73% of older adults report having used the internet (Anderson & Perrin, 2017). Lack of technology adoption, known as

the digital divide (van Dijk, 2006), can create disparities and disenfranchisement among older adults, especially for those with low-incomes. Low levels of digital competence, age-related cognitive and physical decline, and negative attitudes can influence technology adoption among older adults (Czaja et al., 2006; Laguna & Babcock, 1997; Yagil, Cohen, & Beer, 2013).

Additionally, many older adults are affected by structural inequities that limit access to technology (Dassieu & Nadia, 2021). Utilizing findings from the Pew Research Center (Anderson & Perrin, 2017), if 174,200 Rhode Islanders are aged 65+, an estimated 71,000 (41%) are not broadband users and 47,000 (27%) are not internet users. An unpublished survey of state senior centers conducted by the Office of Healthy Aging (40% of senior centers statewide responded) showed an estimated 30,000 community-dwelling older adults do not have access to technology.

Digital Competence

Digital competence is one's confidence and ability to use technology for communication, information, and problem solving in various aspects of life (Lindberg & Olofsson, 2008). Digital competence was defined by the European Parliament and the European Council in 2006 as: the confident and critical use of Information Society Technology (IST) for work, leisure, learning and communication. It is underpinned by basic skills in ICT (Information and Communication Technologie), such as use of computers to retrieve, access, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet (p. 3).

As technology becomes more integrated into everyday life, digital competence is increasingly important for older adults (Czaja et al., 2006). Unfortunately, older adults are unable to learn at the rate technology is developing (Charness, Schumann, & Bortiz, 2002). Older adults' initial technology experiences and how they are taught to use technology can greatly influence ongoing technology adoption (Peek, Wouters, Luijkx, & Vrijhoef, 2016). Hampton and colleagues (2011) found increases in social ties, social support, and diversity in social networks with social media use among American adults, however, they noted that older adults 65+ are much less likely to use social media. In addition, computer anxiety is an obstacle to digital literacy (Laguna & Babcock, 1997). However, technology training can mitigate this anxiety (Czaja et al., 2006), improve computer skills, increase usage, and foster social connectedness and social participation (Gardner, 2010).

Older adults can benefit from technology use through increasing access to health information, promoting social connectedness, improving quality of life, preventing cognitive decline, and maintaining independence (Czaja et al., 2006; Tun & Lachman, 2010). Training older adults on technology to increase digital competence can help them recognize added benefits from using technology and change behavior and attitudes toward technology (Hill, Betts, & Gardner, 2015).

Social Isolation

Social isolation is defined as the distancing of an individual physically and/or psychologically from those in people's networks or from needed relationships with others (Nicholson, 2020). In a qualitative study of 30 older adults, half of the participants brought up themes of exclusion (Bell & Menec, 2015), suggesting that worries about social isolation are common among older adults. Research has found social isolation to be a risk factor for poorer physical and mental health (Miyawaki, 2015), including an increased risk of developing Alzheimer's disease (Wilson et al., 2007), higher mortality risk (Holwerda et al., 2012), and reduced cognitive functioning (Cacioppo & Hawkley, 2009). Older adults are at an increased risk of social isolation due to their decreasing social networks through the loss of loved ones and friends associated with aging (Singh & Misra, 2009), and decreased mobility due to the increased chance of disability and disease (Rantakokko, Mänty, & Rantanen, 2013).

The COVID-19 pandemic has also greatly exacerbated issues with social isolation among older adults, particularly those from disadvantaged communities, and the need for technology adoption among older adults has become a critical issue, particularly with the rise in the availability of telehealth services and other health-related programs (Brooke & Jackson, 2020; Dassieu & Sourial, 2021; Nguyen, Hargittai, & Marler, 2021). Now, more than ever, finding ways to preserve social connections is critical when sometimes physically distancing is needed – especially for those individuals who are at greatest risk due to chronic conditions often associated with older age groups. Increasing digital literacy and connectivity of older adults will help them to remain socially engaged and make fuller use of services such as telehealth to manage their healthcare.

Loneliness

There are various definitions of loneliness in the literature. In different studies, loneliness has been defined as an unpleasant and unwelcome feeling (Hauge & Kirkevold, 2010), and a painful feeling that occurs when one is not as socially or as intimately connected as desired (de Jong Gierveld & van Tilburg, 2006; Perlman & Peplau, 1981). Gerontological studies conducted in Great Britain found that 35 – 46% of older adults ages 65 and older reported feelings of loneliness some of the time to most or all of the time (Cann & Jopling, 2011). In older adults, loneliness has been shown to be significantly associated with depression and suicidal ideation, particularly for minority groups and females (Wright‐St Clair, Neville, Forsyth, White, & Napier, 2017). Recent research has shown that loneliness can be influenced by intergenerational technology programs (Juris et al., 2022).

Best Practice for Teaching Older Adults

Learning Technology: For learning technology, research has shown that a positive initial

experience combined with interactive teaching modalities can help promote continual use of technology among older adults (Rogers, Campbell, & Pak, 2000). Further, programs should create a friendly and supportive environment (Gagliardi, Mazzarini, Papa, Giuli, & Marcellini, 2008; Hickman, Rogers, & Fisk, 2007) that covers topics relevant to older adults (Segrist, 2004). Best practices also suggest providing one-on-one training for older adults with step-by-step, direct instructions (Dauz, Moore, Smith, Puno, & Schaag, 2004; Leedahl et al., 2018). Repetition is also an important aspect of technology training, as older adults generally need more time to learn new tasks (Delollo & McWorter, 2017; Tsai, Shillair, & Cotten 2017). Programs should also provide written materials (Gardner, 2010) and find a balance of self-directed versus instructor-directed learning (Dickinson, Eisma, Gregor, Syme, & Milne, 2005; Xie & Bugg, 2009). Tsai et al. (2017) found most older adults learn how to use tablet devices through exploratory, self-directed learning using a "trial and error" or "playing around" approach.

Reverse Mentoring & Service-Learning Program: A reverse mentoring, service-learning program can create a mutualistic, open relationship where mentors and mentees share knowledge and experiences (Spreitzer, 2006). Reverse mentoring, where younger adults provide support and knowledge to older adults, can be a vehicle to teach older adults about technology and bring generations together (Leedahl et al., 2018; Meister & Willyerd, 2010; Murphy, 2012). Reverse mentoring is a newer model of intergenerational programming in which the younger adult provides the support and knowledge to the older adult, instead of the typical gerontocratic model where elders assist younger generations (e.g., Andreoletti & Howard, 2016). This approach provides the opportunity for younger adults to practice leadership skills and for older adults to learn new skills usually associated with youth (Murphy, 2012), such as social media. Service-learning is an organized community service activity to promote experiential education for students in higher education while they also earn course credit (Underwood & Dorfman, 2006). However, few studies have examined this model to educate older adults about technology in an interdisciplinary manner at the collegiate level using students preparing to be health and human service professionals as mentors. Bringle and Hatcher (1996) defined service-learning: as a credit-bearing educational experience where students participate in an organized service activity that meets community needs and also provides an opportunity to reflect on the service activity in such a way as to gain further understanding of course content and an enhanced sense of civic responsibility (p. 222).

As implied by its name, service-learning is meant to enhance course material through completion of a related service, with an emphasis on learning for students and benefits for those receiving services (Furco, 1996). Young adults participating in service-learning have shown increased ageism sensitivity and more positive attitudes towards older adults, particularly in regards to working with them (Augustin & Freshman, 2016).

Intergenerational Programming: Since the late 1970s, intergenerational programs have been implemented in educational settings to bridge a divide between older and younger generations so that individuals from different generations can collaborate to nurture and support each other (Newman, 1997). Many of these programs have been linked to promoting intergenerational unity, cultural values continuity (i.e., maintaining the community values in younger generations), and community activism (Kaplan, 1997). These programs have provided older generations the chance to pass along wisdom, values, and life experiences to younger generations (Newman & Hatton-Yeo, 2008), and much of the research on intergenerational programs has focused on challenging young adults' stereotypes of older adults (Bringle & Kremer, 2006; Dorfman, Murty, Ingram, & Evans, 2003; Greene, 1998; McCrea & Smith, 1997; Newman, Faux, & Larimer, 1997; Pillemer & Suitor, 2002). Some exceptions to this trend include programs that have focused on the needs of older adults, including social needs (Wang & Chonody, 2013), an increased openness to younger generation's ideas (Young & Janke, 2013), reduced negative self-perceptions and depression (Hernandez & Gonzalez, 2008), and well-being (Underwood & Dorfman, 2008). Older adults have noted the benefits of personal interaction, intergenerational relationships and understanding, and the opportunity to share life experiences with a young person who was willing to listen (Underwood & Dorfman, 2008).

Intergenerational connection through "reverse mentoring" is a way to combat social isolation and increase digital competence in older adults. By pairing young adult mentors with older adults, technological knowledge and skills for older adults can be learned to enhance communication and social involvement (Leedahl et al., 2020). Intergenerational learning programs provide educational benefits and meaningful social interaction. Other benefits for older adults through these connections are enhanced feelings of self-worth, improved self-esteem, and overall satisfaction, with the idea that their life has meaning and importance (Underwood & Dorfman, 2006). These programs can not only change the older adults' perspective but the younger generation as well. Research has shown the intergenerational model used by Cyber-Seniors can help reduce ageist stereotypes and increase interest in working with older adults for the students involved (Leedahl et al., 2020)

The URI Cyber-Seniors Program has successfully created infrastructure to help older adults digitally connect with others (Leedahl et al., 2019), and these efforts greatly increased during the pandemic. Participation in intergenerational programming benefits older adults by improving self-esteem, sense of belonging, and well-being (Underwood & Dorfman, 2008), and the URI Cyber-Seniors intergenerational program has shown to help improve technology use and digital competence among older adults (Leedahl, Brasher, & Estus, 2020). The ultimate goal of this pilot program was to enhance digital inclusion for older Rhode Islanders, alleviate social isolation in the at-risk older adult population, and combat COVID-exacerbated ageism (Buffel, et al., 2020) by offering this intergenerational programming to support older adults' continued learning, growth, and meaningful connections.

URI Team Roles

Dr. Skye Leedahl: Dr. Skye Leedahl is an Associate Professor at URI in the Departments of Human Development & Family Science and Political Science.Dr. Leedahl serves as the Principal Investigator for the grant and all related research projects. This involves grant administration, equipment procurement and distribution, student and staff training and support, community partner correspondence, and budget management.

Kristin Fratoni Souza, M.Ed.: Kristin Souza is the Experiential Education Coordinator for the College of Health Sciences. Kristin is the administrative professional for the program and this project. She helped to improve the web-based infrastructure for the program and enhance the student experience by strengthening the recruitment efforts, training protocol and monitoring systems.

Alexandria Capolino, MS: Alexandria Capolino graduated from URI with a Master's degree in Human Development & Family Science. Alex was the graduate research assistant for most of the project's duration. Alex assisted in helping with URI Institutional Review Board application, supporting student mentors, monitoring progress for the older adult participants, conducting pre/post surveys, editing materials from the program, and cleaning and analyzing data. Alex is now the coordinator for the Newport County project funded by the van Beuren Charitable Foundation.

Emma Pascuzzi, MS: Emma Pascuzzi is a doctoral student in the URI College of Health Science with a focus on Human Development & Family Science. Emma is a graduate research assistant who took the lead in analyzing the qualitative data from the project.

Christina Azzinaro: Christina is an undergraduate Psychology major and assists with the research tasks and other support functions for the grant. She has served as a student mentor while an intern, conducted pre/post surveys with many participants, coordinated and ran the Zoom meetings with older participants, analyzed qualitative data, and assisted with training and supporting students.

Dr. Erica Estus: Dr. Erica Estus is a Clinical Professor and the PharmD Program Director for the College of Pharmacy. Dr. Estus is the co-leader of the URI Cyber-Seniors program. She not only recruits and supports the Pharmacy students who serve as student mentions, but she also helps Dr. Leedahl support the various community partners in Rhode Island. While she is not being paid for the pilot project specifically, her role is important to the program as well as this project.

Dr. Melanie Brasher: Dr. Melanie Brasher is an Associate Professor at URI in the Departments of Sociology & Anthropology and Human Development & Family Science. Dr. Brasher helps with the research aspects of the Cyber-Seniors program. For this pilot project, she conducted the statistical

and data analysis for the pre-and post-surveys collected from participants and any other program-related quantitative data that is collected.

Alyssa Scott, BA: Alyssa Scott is a Master's degree student in the URI Couples & Family Therapy Program. Alyssa was Dr. Leedahl's assigned graduate assistant through the Department of Human Development & Family Science also has been supporting this project (paid through URI). Alyssa aids mostly with administrative and research tasks. Alyssa helped with iPads and binder preparation, registering participants, completing pre-surveys, and monitoring data.

Community Partners

OHA specifically chose the pilot communities to be involved in this pilot program because they had higher COVID-19 rates than other parts of Rhode Island when the project began. The five communities also had strong senior/community centers willing to support their participants, and these communities represented a mix of communities geographically. Furthemore, the goal for the project was to promote social and economic equity by targeting the project within communities with higher low-income populations and that represented racially/ethnically diverse communities.

The five identified partners for this project included:

1. **Leon Mathieu Senior Center in Pawtucket, Rhode Island**

   The Leon Mathieu Senior Center was established in 1980 and is Pawtucket's leading resource for information, assistance programs and benefits for older adults 60 and above, as well as, health and aging activities for adults 55 and older. The Center aims to provide Pawtucket's older adults with a safe, supportive and nurturing environment where they can access information about resources, programs and services available on the local, state and federal levels. (Language from: https://pawtucketri.com/senior-center)

   Staff Members & Project Site Coordinators:
   Mary Lou Moran, Director
   Melissa Cabral, Program Coordinator

2. **Progreso Latino in Central Falls, Rhode Island:**

   Progreso Latino was founded in 1977 to serve Rhode Island's Latino and immigrant communities. Local Hispanic leaders saw that the state's existing infrastructure did not adequately meet the needs of the rapidly growing Latino immigrant population. A small group of community leaders came together to form a multi-cultural, multi-service agency with a mission of helping to build a stronger, more self-sufficient Latino community. Since then, Progreso Latino has grown into the state's largest Latino community organization, serving thousands of people each year through over a dozen core programs and services. (Language from: https://progresolatino.org/)

   Staff Member & Project Site Coordinator:
   Dominga Taveras, Wellness & Senior Program Coordinator

3. **Department of Senior Services in Providence, Rhode Island**

   The Department of Senior Services enhances the quality of life for senior residents in Providence and creates awareness that seniors are a valuable asset to the community. In advocating for its constituents, the department provides valuable resources to seniors. (Language from: https://www.providenceri.gov/mayor-city-services/senior-services/)

   Staff Member & Project Site Coordinator:
   Sue Robbio, Director of Senior Services

4. **Pilgrim Senior Center in Warwick**

   The City of Warwick's Division of Senior Services is a community focal point that addresses the needs of Warwick's maturing population. The Division encourages adults 55 years of age and older and disabled to come together for programs and services that encourage diverse concerns and interests, and are supported with sensitivity and dignity. The Division serves as a resource for the entire community and encompases information on aging and supportive services. (Language from: https://www.warwickri.gov/senior-services-pilgrim-senior-center)

   Staff Members & Project Site Coordinators:
   Kathleen Bohl, Senior Center Program Manager
   Meg Underwood, Director of Senior Services

5. **West Warwick Senior & Community Center in West Warwick in collaboration with the Coventry Resource and Senior Center**.

   The West Warwick Senior Center focuses on the needs of the older population of West Warwick. The Center works to promote the independence and well being of their senior citizens and provide services to maintain or improve their quality of life. The West Warwick Senior Center promotes and advocates for institutional change and public policy to ensure the independence of all persons in the Town of West Warwick. (Language from: https://westwarwickseniorcenter.com/)

   The Coventry Resource and Senior Center offers services to all residents of the Town of Coventry. Their staff, both professional and paraprofessional, provides directly or makes arrangements/referrals for the following services: outreach, information, support services, case management, socialization, recreation, education, health services, advocacy,

transportation, volunteer opportunities, nutrition, fitness and more. (Language from: https://coventryri.org/human-services)

Staff Members & Project Site Coordinators:
Manny Murray, President/CEO & Director of Human Services for the West Warwick Senior & Community Center
MaryAnne Iannitti, Mealsite Manager for the West Warwick Senior & Community Center

Each partner site completed an agreement form that was submitted to the URI Institutional Review Board (IRB), which made them an official research site for this project. As part of this, each partner site recruited individuals for the iPad pilot program by utilizing a study recruitment flier and tailoring the language to align with their center's newsletter or email needs. Partner sites identified coordinators who worked with the URI team to identify and support older participants as well as support URI student mentors. These coordinators were in regular communication with Dr. Leedahl via email or phone. All site coordinators and involved staff received a small monetary incentive (gift card) for assisting in the recruitment and implementation process for the pilot project.

Program Elements

Since the cost for a device and internet connectivity is a barrier for many older adults, especially those with lower income, we developed this iPad pilot program to provide a new device and Hotspot for participants while also receiving appointments with university student mentors.

We utilized a number of spreadsheets to track information including: participant intake form data, pre- and post-survey administration dates, assigned iPads and Hotspots, delivery dates for the devices, phone numbers, assigned student mentors, and progress. These spreadsheets were updated weekly so that various team members could communicate with each other about recruitment efforts, pre- and post-survey completion, progress with training, participation in Zoom meetings, and other administrative matters.

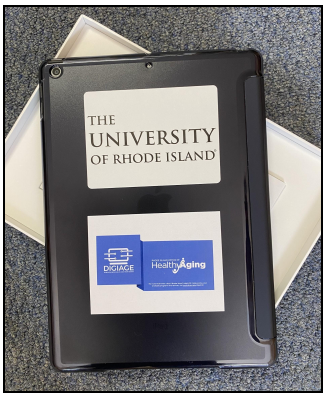
iPads

Based on previous experience in assisting older adults with technology, we chose to purchase Apple iPads for participants in this pilot program. iPads were chosen for a number of reasons: 1) They tend to be the most intuitive for older adults learning technology for the first time or who consider themselves less knowledgeable about technology; 2) URI students use Apple products most consistently and thus are better equipped to mentor individuals with Apple products; 3) Apple products tend to change the least over the years, meaning the interface does not change substantially, and is thus easier to learn for long-term use; 4) Apple products tend to last longer than other products and receive consistent updates, thus participants would be receiving a reliable device that could last them for many years; 5) Based on our experiences, Apple iPads seem to make people happy and excited to learn.

We ordered 200 iPads in November right after receiving the grant funding, and we received the iPads at the end of December 2020. We then identified the first template of apps and links to load onto the iPads prior to delivery after consulting with the Cyber-Seniors Organization, Assistive Technology Access Partnership/Adaptive Telephone Equipment (ATAP/ATEL) in Rhode Island, and older adults who were previous participants in the program. We got the iPads ready for the Spring semester participants, and we handed out the first group of iPads in February. Throughout the project, Dr. Leedahl worked with a Senior Information Technologist from the College of Health Sciences to ensure all the iPads had the same interface. We chose this over attempting to personalize based on community resources or individual needs, as this greatly simplified the tracking systems, iPad preparatory systems, and initial training protocols. Individuals were able to tailor their iPads to meet their personal needs once they received them; however, we wanted to have them all begin from

the same interface. We made sure to include links to specific Rhode Island resources, such as RI Elder Info, Age-Friendly RI Virtual Community Center, Office of Healthy Aging, URI Cyber-Seniors, and the Ocean State Libraries. We did slightly change the interface over time based on participant experiences and site updates.

We purchased navy blue iPad covers, clear screen protectors, and styluses for each participant. Additionally, University of Rhode Island & Office of Healthy Aging/DigiAGe stickers were purchased and then adhered to the back of the iPads. See photos below:



Participant Binders

Materials Provided

We provided each iPad recipient with a binder that included the following (see Appendix):

1. Attractive label on the cover with logos for key partners & funders
2. Introductory letter from Dr. Skye Leedahl
3. Hotspot instruction sheet (if applicable)
4. Liability sheet accepting responsibility for damages to devices
5. Checklist of the Phase I (iPad Basics) & Phase II (Life Enrichment) goals for the Program
6. iPad Information Sheet with details about their iPad and the resources that are already on the iPad
7. Page for writing down log-in & password information
8. Copy of the Informed Consent Form with details about the research project that the students discussed with them over the phone
9. Internet Safety Tips from Attorney General Peter Neronha
10. Common Technology Terms & Definitions
11. Folder with brochures for the Adaptive Telephone Equipment Loan (ATEL) Program & the Rhode Island Relay Program and the Rhode Island Community Health Network

12. Cyber-Seniors Participant Handbook
13. Notebook paper for taking notes

We modified some of the documents when we learned about issues or needs, but most of the documents included in the binder/tool kit are quite solidified and seem to be working (as of June 2022). We share these documents with any community partners who ask or with new groups interested in learning about technology technology or digital literacy for older adults.

Languages
We created binders in both English and in Spanish. The Spanish binder has all of the same resources as the English binder. Both English and Spanish resources are included in the Appendix.

Hotspots

To obtain the Hotspots for study participants, URI entered into a legal agreement with Mobile Beacon. Mobile Beacon is a company that provides high-speed, low-cost mobile internet access to nonprofit organizations, schools, libraries, and healthcare providers. This project was able to work with Mobile Beacon to provide Hotspots to participants due to offering the lowest cost devices that were seemingly the easiest to utilize.

All Hotspots were delivered to individuals after inserting the SIM card and ensuring they were properly activated. We also created small sheets in the boxes with the Wifi name and password so that each individual could easily find this information once they were ready to use it. We also created an easy-to read instruction sheet for using the Hotspots, so this is included in the binder of each participant who receives a Hotspot (see Appendix).

Bags

A bag was also developed with logos so that each older individual receives a bag that includes their iPad, binder, and (if needed) a Hotspot. We developed a process for getting all the iPads ready for distribution, and the URI Department of Human Development & Family Science offered

office space for storing, working on, and organizing all the iPads and the materials.

Group Zoom Calls

During the Spring 2021 semester, we began holding group Zoom meetings on Tuesday mornings. This continued through the Summer 2021 semester, and we switched to Friday morning Zoom meetings in the Fall 2021 semester due to Dr. Leedahl's teaching schedule. Our goal was to hold approximately ten Zoom meetings each semester for any older adult participants or student mentors interested in joining. Throughout the meetings, approximately 10-20 older individuals attended the Zoom calls, and approximately 3-5 university students attended each week. This was an excellent leadership opportunity for many of the students, as many of them lead parts of the calls. We identified a topic or topics for each week. We often chose a technology-related topic, such as avoiding email scams; utilizing Facebook and Facebook Messenger to communicate with family, friends, and community groups; learning Instagram, Pinterest, or TikTok; exploring music, TV, or movie apps; and using accessibility settings. In addition, we often scheduled great guest speakers, including staff from RI Elder Info, Age-Friendly Rhode Island, RI Community Health Network, and ATEL/ATAP to speak to participants about their offerings and resources.

We utilized a similar agenda each week so that participants became familiar with the plan. The meetings began with an introduction from the leader and then included introductions from all attendees, a presentation about the technology topic or the guest speaker, and time for questions/answers and open discussion. Attendees often asked questions throughout the meeting. The picture below shows the group at one of the first group Zoom calls (taken and shared with permission).

Older Adult Participant Information

Program Information

Between January 2021 and December 2021, a total of 272 people from the 5 community partners showed interest in participating in the pilot program. Of those, 167 completed the pre-survey (61.4% response rate) over the phone with URI student researchers and were then assigned an iPad and if needed, a Hotspot. All 167 participants received their iPads, and of the 167 people, 80 received a Hotspot for internet connection (47.9%). Eighty Hotspots were provided, but three were returned and were used by program or senior center staff until they expired. Of the initial 65 people who received Hotspots in April 2021, 40 of them were renewed for a second year of internet connection paid through the RI Housing grant. Of the 167 people who received an iPad, 145 people completed a post-survey by May 2022, thus finalizing their program/research completion (86.8% completion rate). Only 9 iPads were returned by participants (10.8% return rate).

Table 1. Program Information by Community Site

Started Program Between January 2021-December 2021	Warwick	Pawtucket	West Warwick/ Coventry	Providence	Central Falls	Total	%
Registered by Partners	30	58	56	78	50	272	
Completed Pre-Survey (became research participants)	28	41	48	40	27	184	67.7% Response Rate
iPads Delivered	28	41	48	40	27	184	100% Served Rate
Hotspots Delivered	10	24	18	15	22	89	48.4% Need Hotspot Rate
Completed Post-Survey	14	37	42	27	25	145	86.8% Completion Rate
iPads Returned	3	3	3	4	2	14	15.2% Return Rate

Demographics

See Table 2 below for a listing of the demographic characteristics of participants in the program. This includes everyone who completed a pre-survey and was assigned an iPad. The participants ranged in age from 54-100 with an average age of 72.3. The sample was predominantly female (77.7%). The participants were diverse regarding racial/ethnic group, with 56.5% identifying as White, 21.7% as Hispanic, 13.6% as Black, 4.9% as Native American/Alaska Native, and 1.1% as Asian. Most (77.7%) primarily spoke English, but about one-fifth of the participants (20.7%) primarily spoke Spanish. Relationship status also varied with many participants identifying as single (n=64), divorced (n=56), widowed (n=41), or married/partnered (n=32); participants were allowed to choose more than one response. For current employment status, most were retired (66.7%), though 22.9% did identify as unemployed. Most (70.7%) lived alone. The majority (82.3%) of participants were lower income (meaning had less than $30,000 a year in income). About half of the participants (48.9%) had a high school education or below, and about an equal number of participants had some college (25.0%) or were college graduates (26.1%). Regarding self-reported health status, 40.2% of participants stated they were in "good" health; about one-third reported "excellent" or "very good" health, and another one-third reported "fair" or "poor" health. Finally, over half (57.2%) reported having internet access, and 41.5% did not have internet access when starting the program.

Table 2. Demographics of Participants (N=184)

Characteristics	Mean/%	N
Age (Range=54-100)	72.3	184
Female	77.7%	184
Race/Ethnic Group		180
White	56.5%	
Hispanic	21.7%	
Black	13.6%	
Native American / Alaska Native	4.9%	
Asian	1.1%	
Primary language		184
English	77.7%	
Spanish	20.7%	

Other	1.6%	
Relationship status (allowed to choose more than 1)		
Single		64
Divorced		56
Widowed		41
Married/Partnered		32
Current employment status		183
Retired	66.7%	
Unemployed	22.9%	
Employed	5.5%	
Other	4.9%	
Lives alone	70.7%	184
Income		181
Less than $30,000 a year	82.3%	
Greater than $30,000 a year	17.7%	
Education		184
HS or less	48.9%	
Some college	25.0%	
College or more	26.1%	
Self-reported health status		184
Poor	9.2%	
Fair	20.7%	
Good	40.2%	
Very Good	20.7%	
Excellent	9.2%	
Internet access		159
Yes	57.2%	
No	41.5%	
unsure	1.1%	

Psychosocial and Technology Characteristics

See Table 3 below to review pre-survey information for the program participants on the psychosocial and technology measures. Respondents had moderate scores on the isolation scale (average of 22.9) and loneliness scale (average of 2.49). Scores on the QOL scale were relatively high (53.9) with the range in scores being 35-65. In regards to the friendship isolation scale, 27.1 percent of the respondents reported being isolated or very socially isolated. In the "some social support" category were 15.8% of respondents, and the majority of respondents reported being socially connected (27.2%) or very socially connected (29.3%). Average scores on the geriatric depression scale were relatively low (3.26) – indicating a lack of depression since scores can range from 0-15 (higher scores indicating more depression). Regarding survey questions pertaining to technology, the majority of participants never used a tablet (79.3%), and only 8.7% reported daily use. Participants had low to moderate digital competence, with an average score of 2.1 corresponding to a self-rating of "a little" on a variety of digital competence measures. On average, survey respondents reported using technology for 4 out of 8 possible purposes for using technological devices. More detail about these measures can be found in the "Research Methods" section of this report.

Table 3. Pre-Survey Psychosocial & Technology Measures

PSYCHOSOCIAL MEASURES	Mean/%	
Social Isolation scale (Range=3-30; lower score more isolated)	22.9	184
Quality of Life scale (Range=35-65 ; higher score, better QOL)	53.9	184
Loneliness scale (range=0-6; higher scores, more lonely)	2.49	182
Friendship Isolation scale category		183
Very socially isolated	13.0%	
Isolated with low social support	14.1%	
Some social support	15.8%	
Socially connected	27.2%	
Very socially connected	29.3%	
Geriatric Depression Scale (range=0-15; higher scores, more depressed)	3.26	184
TECHNOLOGY MEASURES	Mean/%	

Frequency of tablet usage		184
Never	79.3%	
Monthly	4.9%	
Weekly	5.4%	
Daily	8.7%	
Digital competence (range=1-4; higher is more competent)	2.1	184
Number of purposes for using technology (range=1-8)	4.0	184

Student Mentor Information & Experience

Student Mentor Information

From Spring 2021 semester through Fall 2021 semester, 84 total students provided 4,783 hours of mentorship to our older adult participants. The student mentors were a diverse group of students in background, languages spoken, and academic programs. The students participating were enrolled in 19 different degree granting programs from five different URI Colleges. Please see the tables below for information about the colleges and majors represented by the student mentors as well as the numbers of students each semester and the hours dedicated to the program. Most students received college credit (service learning hours or internship hours) for participating in the program; however, some of the students were in paid student hourly positions (see Table 6 for details).

Table 4. Student Mentor Majors within URI College

URI College	Majors within URI College
College of Health Sciences	Human Development & Family Science, Health Studies, Communicative Disorders, Psychology, Kinesiology, Gerontology
College of Pharmacy	Pharmacy
College of Arts & Sciences	Sociology, Political Science, Communication Studies, Film Media, Writing & Rhetoric, Criminology & Criminal Justice, Gender & Women Studies, Spanish, French
College of Education & Professional Studies	Elementary Education, Early Childhood Education
College of Business	Supply Chain Management

Table 5. Student Mentors Participating by Semester

URI Semester	Number of Students Participating
Spring 2021	30 Total Students
Summer 2021	17 Total Students
Fall 2021	37 Total Students
Total	84 Total Students | 77 Unique Students

	(Unique reported because sometimes students participate over multiple semesters)

Table 6. Type of Student Mentor & Field Hours

URI Semester	Type of Student Mentor	Total Field Hours Per Student	Total Hours
Spring 2021	20 Pharmacy Students 4 Unpaid Student Mentor Interns, HDF 480 2 Unpaid student mentor intern 1 Unpaid student mentor intern 1 Unpaid student mentor intern 2 Unpaid student mentor intern 1 Paid graduate research assistant	40 hours each 208 hours each 78 hours each 90 hours 104 hours 105 hours each 10 hours/week for 13 wks	2,322
Summer 2021	2 Unpaid Student Mentor Interns 1 Unpaid Student Mentor Intern 1 Unpaid Student Mentor Intern 1 Unpaid Spanish-Speaking Student Mentor 1 Paid Spanish-Speaking Student Mentor 1 Paid Graduate Student Research Assistant	105 hours each 140 hours 121 hours 117 hours 420 hours 17 hours/week for 13 wks	1,229
Fall 2021	28 Unpaid HDF 314 Students 9 Pharmacy Students 1 Unpaid HDF 497 Student 1 Unpaid CMD Student Volunteer 1 Paid Spanish-Speaking Student Mentor 1 Paid Research Assistant 1 Graduate Assistant for Dr. Leedahl	15 hours each 40 hours each 117 hours 10 hours/week for 13 wks 5-10 hours/week for 13 wks 10 hours/week for 13 wks 5 hours/week for 13 wks	1,232
Total			4,783

Student Mentor Recruitment Process

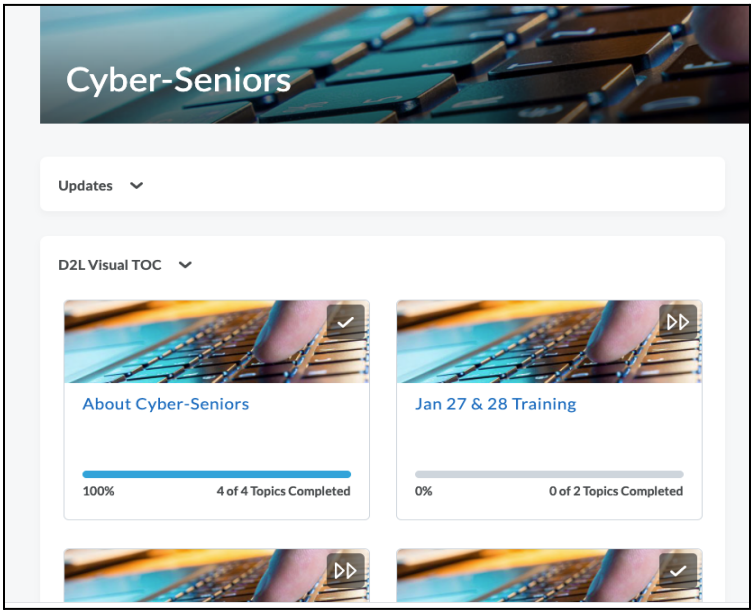
Each semester, student mentor recruitment happened through a variety of mechanisms. We created a detailed intern description and distributed the description across campus. We posted the position on Handshake, a URI platform where students and alumni search for jobs and internships. We also sent emails to faculty and staff who support unpaid internships each semester. To identify Spanish-speaking interns, we sent emails to faculty from majors known to have Spanish-speaking students (e.g., Spanish department). Dr. Leedahl and Dr. Estus offered this program as one of the service learning or experiential education opportunities for their classes as well.

Training/Onboarding Process

Training & Materials

Each student mentor completed training (online through Cyber-Seniors and via Zoom/in-person), took a pre-survey, and received an iPad for the semester if they were assigned to sites or clients who are part of this project. The students returned their iPads at the end of the semester and completed a post-survey.

Using URI's online learning platform, Brightspace, we created a specific Cyber-Seniors site to build out a comprehensive resource for all URI student mentors. Prior to their mentorship experience, student mentors attended a mandatory training where they were added to this Cyber-Seniors resource site, learned of the intricacies of the program, and gained insight into how to successfully engage with the older adult population.



Concepts included in this training and Brightspace site include:

- About Cyber-Seniors
- Benefits of Becoming a Student Mentor
- Mentor Checklist *(See Appendix)*
- Mentor Handbook *(See Appendix)*
- Best Practices When Engaging with Older Adults
- Participant Handbook
- Tracking Student Mentor Hours
- Resources in Spanish

As part of this onboarding process, we developed a series of documents and spreadsheets in order to share participant information with students, track hours each week, schedule appointments, and track participant progress. One spreadsheet was the hours tracker that includes a tab for each week so that students can easily inform us of how they spent their time each week. We also created a client log document so that students could write notes about each client meeting they had.

Check-In Meetings

During the height of the COVID-19 pandemic when in-person programming was scarce, our program in Spring 2021 and Summer 2021 operated primarily remotely through phone and zoom meetings. As a result, our training and check-in meetings with the students were also completed via remote technology. We met weekly or bi-weekly in either group or individual meetings with student mentors to provide space to ask questions, share concerns and offer support. In the Fall of 2021, we were able to return in-person where Dr. Leedahl and Dr. Estus were able to check-in with students during class time of the courses that were associated with the program.

Student Experience

An extensive analysis of student experiences from the program is forthcoming. However, below are some quotes from students to demonstrate what students obtain from this experience.

Why would or wouldn't you recommend the Cyber-Seniors Program?

"I think this is a great way for seniors to get involved and help to expand their knowledge. I really enjoyed this program and I think my clients enjoyed their time. "

"I would recommend the Cyber-Seniors Program because it gave me the opportunity to interact with older adults in my community. I also enjoyed teaching them new skills and seeing their progress over time. "

"I would recommend the cyber seniors program because of the meaning of the program within itself. To be able to help those that are in need, whether it's helping with technology or listening to them talk about their lives I believe is worth the time and energy. To know you're making a difference and changing someone's life whether it's one email or google search away, is what I strive for in my future."

What was it like teaching older adults how to use technology?

"It requires a lot of patience to teach older adults how to use technology."

"Teaching older adults to use technology remotely was challenging and required patience, but mostly everyone I helped was very kind and grateful for help so it was a fulfilling experience. "

"It was challenging not being face-to-face with the seniors trying to help them."

"It was very difficult at first because I was using words that they did not know and it was very complicated for them to try to understand what I was saying. I think that once we were able to figure out Zoom and how to share screens, it was easier for them to follow along."

"It was great really getting to know each person and adjusting to their needs. I always wanted them to feel like they weren't being rushed and that their questions were great."

"It definitely was a little challenging, but it was in fact quite rewarding. Being able to see their progress and their enthusiasm to want to learn, no matter the age gap is very inspiring."

In being a student mentor for the Cyber-Seniors program, what was the most memorable experience?

"The most memorable experience was when a woman needed help with an application for a job because the situation was more serious than other calls."

"My most impactful cyber-seniors program experience was when I first started doing my calls. I was not connecting with the adults yet. But then I spoke to the Spanish speaking client. As soon as the client discovered that I spoke Spanish she was so happy. She was so grateful to me for being able to help her and her not having to deal with language barriers."

"Helping one of my members figure out email so she could communicate with her family over in Germany."

"My most memorable experience was forming a relationship with 2 of the Cyber-Seniors participants I worked with. We had regularly scheduled, long standing appointments and I'll honestly continue to work with them as long as they need it."

What was the most significant thing YOU learned during this program?

"The most significant thing I learned during this program was how to explain complicated topics to someone who does not have any experience or understanding of the subject. It taught me to be a better communicator."

"The biggest thing I learned was communication skills. I was able to practice my ability of talking to older adults and speaking slower and more clearly."

"I think the most significant thing that I have learned is being able to clearly communicate with my clients to ensure that they are understanding everything that I am saying to them. There were a lot of times where I was speaking and my clients had to stop me and ask to further explain myself. I think my clients really helped me to learn how to communicate more clearly."

"The most significant thing that I learned is that older adults and young adults need intergenerational programs. I wanted the participants to feel like they were learning constantly and they gave me great advice regarding post graduation plans."

"Don't take life for granted because even our memory is a blessing to have."

"The most significant thing for me about doing this was not learning new information, rather it was practical application of information I already knew. It helped to solidify things that I had learned in several classes."

Intergenerational Contacts

Student mentors connected with the older adult participants in a number of ways including in-person appointments, phone calls and through online meeting platforms such as Zoom. Initially most appointments were held via phone or through Zoom, particularly when in-person programming was not permitted at the senior centers, but as time went on and in-person became an option, some students were able to meet in-person with participants.

While student mentors were trained to tailor each appointment according to the participant's technology knowledge and goals, each mentor utilized the Older Adult Checklist (see Appendix) to measure progress. The first phase of the checklist focused on learning goals related to iPad Basics including how to turn the iPad on and off, charge the iPad, connect to Wifi, and set up an email account. The second phase of the checklist focused on learning goals related to Life Enrichment including how to use Zoom and email proficiently, what each of the apps on the iPad do, settings options related to accessibility, and downloading apps related to their life enrichment goals (exercise, healthcare, banking, games). See the tables below with details about the numbers of calls or appointments held each semester. We included missed or re-scheduled calls to give a sense of some of the scheduling challenges encountered.

Table 7a-c. Number of Calls per Semester

Fall 2021	Total Calls or Appointments Held:	Total Calls or Appointments Missed/Rescheduled:
Checklist Phase 1 Appointments:	113	99
Checklist Phase 2 Appointments:	55	22
Total Phase 1 & 2:	168	121

Summer 2021	Total Calls or Appointments Held:	Total Calls or Appointments Missed/Rescheduled:
Checklist Phase 1 Appointments:	270	76
Checklist Phase 2 Appointments:	321	35
Total Phase 1 & 2:	591	111

Spring 2021	Total Calls or Appointments Held:	Total Calls or Appointments Missed/Rescheduled:
Checklist Phase 1 Appointments:	104	47
Checklist Phase 2 Appointments:	11	1
Total Phase 1 & 2:	115	48

Research Methods

As part of implementing the iPad pilot program, two research questions guided the methodology for the research study:

1) For older participants in the program, were significant improvements detected in technology use, digital competence, quality of life, social isolation, loneliness, and mental health from the pre-survey to the post-survey?
2) How did the program help people feel more connected & healthy?

Inclusion Criteria

Dr. Leedahl consulted with the Office of Healthy Aging team to determine the inclusion criteria for the pilot project. For the older adults in the pilot program, inclusion criteria were: 1) age 50 years or older; 2) from the five selected communities; 3) lack and want a digital device &/or internet access; 4) be willing to receive 3 months of technology training through the URI Cyber-Seniors program; and 5) be willing to complete intake forms, pre-or post-surveys, and take part in a phone interview about their experience.

IRB Application & Approval

Throughout the course of this project, we submitted an application to the URI IRB to approve the study protocol, community partner agreements, recruitment methods, consent process & verbal consent form, surveys, and training for any study personnel. A copy of the verbal consent information for research is included in the Appendix. We also had to get approval for all materials developed in Spanish. We submitted eight amendments to the URI IRB from January 2021 through December 2021, mostly due to adding new student researchers to the protocol. All URI faculty, staff, and students who assist with the research involved in this study complete Collaborative Institutional Training Initiative (CITI) research, ethics, and compliance training for social/behavioral research.

Older Adult Recruitment & Data Collection

Older adults were recruited through the five community partners. Each partner was given a flyer, and they were able to modify the language and format to meet the site's printed newsletter or email

newsletter needs. When an individual interested in being a part of the iPad project called the centers, staff from the center filled out some questions from a Google Form that was sent to Dr. Leedahl. Once individuals were recruited, student researchers from URI called each interested person to let them know the details of being a part of the URI digiAGE iPad pilot research study. This often involved multiple calls, voice messages, and sometimes consultation with senior center staff to reach people. If the individual provided their verbal informed consent to participate in the research study and program, the student then asked them questions from the pre-survey. Students marked down responses to the pre-survey and entered the information into a Google Form.

After completion of the pre-survey, each person was assigned an iPad and a Hotspot (if needed). After individuals were assigned an iPad, toward the beginning of each semester Dr. Leedahl reached out to the senior/community center staff to let them know the iPads were ready for drop-off. We then arranged a day/time to bring the iPads and Hotspots to the site or for site staff to pick them. The site then identified a process for getting the iPads to each individual. After that, each older participant was assigned to a student mentor, and the student mentors called them to schedule days/times to meet with them. Student mentors were assigned to a number of older participants based on the number of hours they were able to commit to the program over the course of the semester. For example, if a student mentor had five hours each week to work with participants, they were assigned 8-10 people since they met with each person weekly or bi-weekly for about 1 hour.

Once participants completed Phase 1 and Phase 2 checklists, student mentors let research staff know they had finished their meetings and that the person was ready for a post-survey. In cases where a person did not finish the checklists during the time the students had to meet with them, we re-assigned the older participant to the next semester. We would then complete a post-survey with them once they finished. To complete the post-surveys, one of the IRB-approved student researchers would call the older adult and ask them questions over the phone. Most of the questions were the same as the pre-survey. We did include a few program evaluation questions at the beginning of the post-survey, and we did not repeat the demographic questions. At the end of the post-survey, we introduced the interview portion to the participants. The interview portion included open-ended questions about the program and how it influenced people's quality of life, social connectedness, and loneliness.

Pre/Post Quantitative Measures

For the pre/post phone survey, we included the following measures. A copy of the pre/post survey can be found in the Appendix. Each item and scale was measured in both the pre and post surveys.

Digital Competence: To assess for digital competence, we asked participants how much they felt competent or able to: 1) search & find information about goods & services; 2) read or download a

file; 3) obtain information from public authorities or public services; 4) seek health information; 5) send/receive emails; 6) use video calls, such as Skype; 7) participate in social networks; 8) post messages on social networks; 9) share talents or interests on social networks; 10) share interests and ideas with those they know; 11) use copy/paste tools; 12) have a telehealth appointment. For each of these survey items, response choices included: 1) not at all; 2) a little; 3) somewhat; 4) very much. Using these questions/responses, we created two measures: a composite scale that averaged the responses across the 12 questions (range 1-4) and a count of the number of digital competencies in which respondents reported "very much" (range 0-12).

Technology Use: To examine technology use, we asked respondents how frequently they use the following technological devices: 1) desktop computer; 2) laptop computer; 3) tablet (e.g., iPad, Kindle); 4) Smartphone (e.g., iPhone, Android); 5) Flip phone; 6) Landline; 7) Television; 8) Other. For each of these survey items, response choices were: 1) never; 2) monthly; 3) weekly; 4) daily; 5) multiple times a day. We created a scale, "technology usage", which contains an average across the 8 questions for technology use (range 1-5). We also examined how many different technological devices (computers, tablets, phones) they report using at least weekly (range 0-5).

Purpose of Using Technology: To examine purposes for using technology, we asked respondents if they use technological devices for: 1) email; 2) social media (Facebook, Twitter); 3) watch videos (YouTube); 4) video conferencing (Skype, FaceTime, Google Meet, Zoom, WebEx); 5) Search the internet; 6) online banking or paying bills; 7) health appointments or health information; 8) shopping; 9) other. Response choices were yes or no. Using these responses, we created a scale, "purposes for technology", which counts the total number of purposes they use technology for (range 0-8).

Quality of Life: We used the Quality of Life (QOL) Scale developed by Bowling (2013). To obtain a complete scale score, this measure uses 13 questions (e.g., I enjoy my life overall, I look forward to things, I try to stay involved in things) and asked participants to respond from strongly disagree to strongly agree (5 point Likert scale). We created a composite score by summing the responses, which means the range of possible scores was 13-65 (higher scores mean better quality of life). The quality of life scale also includes a global question that asks respondents to rate their quality of life as a whole from 1) very good, 2) good, 3) alright, 4) bad, and 5) very bad. We examined responses to this question as well, and on this, lower scores indicate better quality of life.

Social Isolation: We used the Social Isolation Scale developed by Nicholson, Feinn, Casey, and Dixon (2019). This scale uses 6 questions to ask about interactions with others, relationships, and group belonging. Three items pertain to frequency of interactions, including questions such as: How many of them (family, friends, or neighbors) do you see face-to-face at least once a month? Response choices include none, 1, 2-3, 4-5, 6 or more. Three additional questions ask about

relationships with individuals or groups you are a part of. Respondents are asked about the level of agreement (strongly disagree to strongly agree) with statements such as: I feel that I spend enough time in social activities. The scale consists of a composite sum of all responses, and scores can range from 6-30 (lower scores mean more isolation). There are also 2 sub-scales that can be examined for Connectedness & Belongingness. Each sub-scale includes 3 of the questions, and scores can range from 3-15 (lower scores mean more isolation).

Loneliness: We used the Loneliness Scale developed by Gierveld and Tilburg (2006). This includes six questions (e.g., I experience a general sense of emptiness. Answers: Yes, More or less, No). We created a composite score by summing the responses, and scores can range from 0-6 (with higher scores indicating more loneliness). There are also two sub-scales for Emotional Loneliness and Social Loneliness. Each sub-scale is calculated from responses to three of the questions, and scores range from 0-3 with higher scores indicating more loneliness.

Geriatric Depression: We used the Geriatric Depression Scale-Short Form (GDS) developed by Sheikh and Yessvage (1986). For this scale, participants are asked 15 questions (e.g., Are you basically satisfied with your life? Do you often get bored? Answers: Yes or No). A composite score was then created by summing all responses, and the scores can range from 0-15 (higher scores indicate less depression). We also examined a depression level variable based on the GDS where scores from 0 to 4 are categorized as normal, 5-9 is mild depression, and 10 or higher indicates a respondent is moderately or severely depressed.

Post-Survey Interview Data Collection

For the post-survey interview, student researchers offered to reschedule the interview at a different time or complete it right after the other questions. Nearly everyone chose to complete it that day. The student researchers informed participants that this was now their chance to tell us details about the program and how it may have influenced their lives using their own words rather than picking answer choices. They informed the participants that we would be recording the interview using an audio recorder. The participants were informed that their name would not be stated in any of our reports and that the recording would be deleted once we no longer need it for analysis purposes. We asked them if it was okay to proceed, and student researchers then pressed the recording button. The audio recordings were uploaded to a secure file folder and shared with Dr. Leedahl. The student researchers deleted the recordings from the device and their files. Dr. Leedahl uploaded the audio recordings to a transcription service, and the recordings were professionally transcribed. For any interviews conducted in Spanish, the recordings were transcribed in Spanish, and then translated into English using a translation service and verified by student researchers who spoke both English and Spanish. All transcripts were uploaded into NVivo qualitative software for analysis.

The interview questions are included at the end of the post-survey (see the Appendix). Open-ended interview questions included the following: What was your favorite part of the program? What has it meant for you to be involved in the program? Has your iPad helped you connect with family and friends in different ways? What social groups or activities have you joined (or been able to do) since getting your iPad?

Quantitative Analysis

To answer Research Question 1, we analyzed items and scales from the pre- and post-surveys. For each variable, we compared whether there was a change in the score from pre to post and if that change was statistically significant. For each variable, we are testing the hypothesis that scores changed from the pre survey (time 1) to the post survey (time 2).

Qualitative Analysis

To answer Research Question 2, we analyzed responses from the 98 people who answered questions from the post-survey interview. A grant from URI to Dr. Leedahl allowed for the hiring of two students to help in completing this project by the date of this report (June 2022). To analyze the interviews (n=98), the study team consisted of Emma Pascuzzi, Christina Azzinaro, and Dr. Leedahl. To begin, we all reviewed the interview guide and three transcripts. Everyone was asked to write down key themes they identified from this initial review. We then held a meeting with the three of us in which we compared key themes and came up with a preliminary list of primary codes and subcodes. Emma and Christina then went back to the transcripts to ensure this list could be used for coding. We met one more time where we made some modifications to the coding list. Once we agreed on the list of codes and subcodes, Ms. Pascuzzi and Ms. Azzinaro each coded five of the same transcripts and then compared the codes. In instances where there was disagreement, they met to discuss the differences and identify an agreed path forward for coding. Once agreements were made, they coded another five transcripts and reviewed agreement percentages. Once they achieved at least 80% agreement, they continued with the remaining transcripts by dividing them up.

Study Findings

Quantitative Results (Research Question 1)

The first research question for this study was: For older participants in the program, were significant improvements detected in technology use, digital competence, quality of life, social isolation, loneliness, and mental health from the pre-survey to the post-survey?

Technology Measures

Based on statistical analyses, the program participants have shown statistically significant improvements in digital competence (average score) going from 2.06 to 2.74 (range 1-4), and the number of digital competencies in which respondents reported feeling "very much" able to do increased from 2.01 to 4.01 (range 0-12).

In addition, participants' average technology use from pre- to post-survey increased from 1.99 (monthly) to 2.7 (close to weekly), and tablet use frequency went from 1.53 (less than monthly) to 4.08 (daily); both were statistically significant. Furthermore, the number of technology devices used regularly went from 1.53 (pre) to 2.62 (post), and the number of purposes in which participants used technology went from 4.09 to 5.55; both were statistically significant. Please see Table 8 for these details.

Table 8. Pre/Post Results for Technology Measures

	Average (mean)			
	Pre-Survey	**Post-Survey**	**N**	**Statistically Significant?**
Digital Competence (average, range 1-4)	2.06	2.74	145	Yes
Number of digital competencies (range 0-12)	2.01	4.01	145	Yes
Technology usage (average frequency, range 1-5)	1.99	2.7	145	Yes

Tablet use frequency	1.53	4.08	145	Yes
Number of different types of devices used regularly (range 0-5)	1.47	2.62	145	Yes
Purposes for using technology (range 0-8)	4.09	5.55	145	Yes

When examining tablet use specifically (see Table 9 below), in the pre survey a majority of respondents (76.6%) reported never using a tablet. In the post survey, most respondents reported daily or higher tablet usage (76.6%). Only 2.8% of respondents in the post survey reported only monthly usage. No one reported "never" on the post-survey.

Table 9. Tablet Use Pre/Post Outcomes

Frequency of Tablet Use (e.g., iPad)				
How often used?	**Pre-Survey**		**Post-Survey**	
	Frequency	Percent	Frequency	Percent
Never	111	76.6%	0	0%
Monthly	9	6.2%	4	2.8%
Weekly	9	6.2%	30	20.7%
Daily	14	9.7%	61	42.1%
Multiple times a day	2	1.4%	50	34.5%
Total	145	100%	145	100

In examining the digital competence questions specifically, Table 10 below shows the pre/post differences across all the questions. As shown, all questions were statistically significant from pre- to post-survey. The questions that show the greatest increase from pre- to post-survey were: using video calls, obtaining information from public authorities or public services, seeking health information, and being able to have a telehealth appointment.

Table 10. Digital Competency Pre/Post Outcomes

Digital Competency (1=not at all, 2=a little, 3=somewhat, 4=very much)	Average (mean)			Statistically Significant?
Feel confident or able to:	Pre	Post	N	
Search and find information about goods and services	2.60	3.21	145	Yes
Read or download files	1.86	2.63	145	Yes
Obtain information from public authorities or public services.	2.10	2.94	144	Yes
Seek health information	2.31	3.12	144	Yes
Send/receive emails	2.58	3.26	144	Yes
Use video calls, such as Skype	1.87	3.01	143	Yes
Participate in social networks	2.14	2.54	143	Yes
Post messages on social networks	1.86	2.32	145	Yes
Share talents or interests on social networks.	1.74	2.16	144	Yes
Share my interests and ideas with those you know.	1.98	2.46	142	Yes
Able to use copy/paste tools	1.70	2.41	144	Yes
Able to have telehealth appointment	2.01	2.81	144	Yes

Psychosocial Measures

Based on our analyses, we identified statistically significant improvements for participants from pre-survey to post-survey for the QOL scale, QOL global measure, social isolation scale, social belongingness sub-scale, loneliness scale, emotional loneliness sub-scale, and depression level. **This provides strong evidence that the URI Cyber-Seniors digiAGE iPad pilot program positively influences quality of life, social isolation, loneliness, and mental health for participants in the program.** For the social connectedness and social loneliness sub-scales and the depression scale, we identified improvements in the scores from pre- to post-survey; however, these results were not statistically significant.

To help with interpreting the social isolation scores, these results show that the URI Cyber-Seniors digiAGE iPad pilot program influenced social belonging (meaning perceived quality of social relationships) for participants more so than social connectedness (meaning the amount of people they have contact with or in whom they feel close). For the loneliness interpretation, the iPad pilot program seemed to influence emotional loneliness (meaning feelings of emptiness or rejection) more so than social loneliness (meaning increase the amount people feel they can rely on others or trust others) for participants. For depression, total scale scores did not change significantly, but as a whole based on the depression level difference, there were fewer people who were in the mild depression or moderate/severe depression groups and more people in the normal depression group after participating in the program.

Table 11. Social Connectedness & Well-Being Outcomes

	Average (mean)			
Scale	**Pre**	**Post**	**N**	**Statistically significant?**
Quality of Life (QOL) Scale **(Range=35-65; higher score, better QOL)**	54.24	55.3	145	Yes
QOL global measure **(lower scores, better QOL)**	2.06	1.84	144	Yes
Social Isolation Scale **(Range=3-30; lower score more isolated)**	23.28	24.32	145	Yes
Social Connectedness Sub-Scale	11.35	11.79	145	No
Social Belonging Sub-Scale	12.01	12.53	144	Yes
Loneliness Scale **(range=0-6; higher scores, lonelier)**	2.42	2.17	144	Yes
Emotional Loneliness Sub-Scale	1.27	1.11	144	Yes
Social Loneliness Sub-Scale	1.16	1.05	141	No
Geriatric Depression Scale	3.20	2.93	145	No

(range=0-15; higher scores, more depressed)				
Depression level (%, based on Geriatric Depression Scale) Normal	74.5	82.1	145	Yes
Mildly Depressed	19.3	13.1		
Moderate/Severely Depressed	6.2	4.8		

Qualitative Results (Research Question 2)

The second research question for this study was: How did the program help people feel more connected & healthy? To answer this question, we analyzed the qualitative data from the post-survey interviews.

Themes Related to Feeling More Connected & Healthy

Based on the responses from the post-survey, we aimed to understand how the program has helped participants feel more connected within their environment and improve their health. We identified the following themes: 1) Improved feelings of well-being and overall health; 2) Increased contact with family and friends; 3) Offered new connections to the community. Table 12 below shows the number of comments identified that fit into that particular sub-theme. These numbers are provided to indicate how often each sub-theme was mentioned, but we do not suggest over-interpreting these numbers.

Table 12. Themes and Sub-Themes Related to Feeling More Connected & Healthy by Number of Comments

Theme/Sub-Theme	Number of Comments
Improved feelings of well-being & overall health	
Mental health (mood improvement)	54
Quality of life (independence)	72
Health classes (exercise, mindfulness)	7
Sense of purpose	55
Increased contacts with family/friends	

Video calls	29
Easier to communicate in general (email, texting)	72
Offered new connections to the community	
More capable and confident with their devices	63
Now know where to find resources	64
Now join social groups/activities	62
Participate in faith-related groups	6
Meet with doctors and book health appointments	8
Long-lasting life changes	32

Improved feelings of well-being and overall health

In today's era, many older adults continue to have a distant relationship with technology (Faverio, 2022). After participating in this program, a number of individuals noted that they experienced a feeling of **inclusivity**, such as feeling heard and being seen in the social world.

"Well, I like the fact that it was involved in learning something different. It's just an opportunity to learn and get out and learn something new. That, for seniors, is very important."

"It has helped me because now I can be involved with other people that are using the tablet or the phone and be in the conversation. Before, I just had to sit there, and I didn't know nothing was going on. Now, I can participate."

"Because now when my sister or my nieces or nephews are all sitting around and we're all sitting around enjoying having a conversation about the phone or a tablet and stuff, I can join in now myself. I have somewhat of a say. I can join in."

In relation to well-being, most older adults alluded to the fact that participating in this program was able to improve their **mental health** in some aspect.

"Oh my God, I picked up from 75% to 95%. I'm so happy, you don't know. You just don't know."

"Right and that helps with your mental state. Your ability to connect when you can't physically be there with that person. It really does help. It really does."

"It actually has impacted my mental wellbeing because like I said, with FaceTime, I have a friend, my best friend who lives far away, and I was able to see her for the first time in two years, that made me feel really good."

In addition to mood improvement, some individuals mentioned that their overall **quality of life** has improved after participating in the program.

"For everything. I think it's great that it keeps my mind going with this and getting to meet people and helping people out that I love. It's something just to keep you active instead of just doing nothing and I really will enjoy it more when I get into it more and everything."

"It's a great program because it helps us older people learn how to communicate with other people in our age with modern technology, because a lot of us don't know how to do it. By learning and being able to talk to someone different, it's a great impact on my life anyway. It's helping a lot because a lot of people are ignorant to it. My sister came up here yesterday just for a flip phone, because she couldn't get it back on and stuff. I learned a little bit about how to get from A to B and stuff like that. We got it back working again."

"That's a big question. It has meant everything. It impacted me in a positive way, like a 100% because it totally enhanced my-- and sometimes provided in some quotes, a lot of instances of technology in order for me to do things I couldn't do before, especially because of the pandemic. I mean, it would've anyway but it's tenfold because of the pandemic. It's just been remarkable."

One aspect that has contributed to individuals' quality of life and mental well-being, was the feeling of being **less alone**. One participant specifically noted that once people get older, it becomes increasingly more difficult to connect with others, but technology has helped with that challenge.

"Oh yes, that has made such a big difference. It's made me feel not so alone anymore. Sometimes you feel, especially when you're older, you feel like, "Okay, you've lived this world, you've made all these connections, but now that you're on your own, the whole world is on your shoulders. What are you going to do?" You know what I mean? It's a big difference."

During the pandemic, it was important to engage the older adults in virtual **classes for health** improvement purposes, such as exercise and mindfulness. A few participants noted that they surprisingly enjoyed joining these classes and found them very helpful.

> *"One of the things I've enjoyed through a different organization is-- And I can't believe I like it [virtual classes] but I do, it's an exercise class."*
>
> *"The yoga classes and chair yoga. I was following chair yoga a lot. Then I guess there was meditation. When I started getting nervous about the COVID and panicking, I could fill up a meditation session and get myself calm down instead of having someone do it, calm me down. That kind of thing."*

Although physical exercise was important for older adults, it was important to exercise their mind as well. Many individuals mentioned how using the iPad allowed them to **improve their cognition,** such as memory and focus.

> *"It's really helpful in, I think, in keeping my mind on track and helping with memory and just to keep clear thoughts and to remember to be mindful of the things that are going on."*
>
> *"It's really helpful, I think, in keeping my mind on track and helping with memory and just to keep clear thoughts and to remember to be mindful of the things that are going on."*
>
> *"What I really use the iPad for is I read. I read a lot on my iPad… They had a game on there called Lumosity [online program with games for improving memory, attention, processing speed, and problem solving]. It teaches things. It teaches old people how to move fast, how to think, how to memorize things. It's just great for me."*

Lastly, this program was able to provide older adults with a **sense of purpose**. Oftentimes older adults mentioned feeling disconnected or helpless due to their age and the ever-changing world of technology. Participants of this program found that the iPad and this program helped them find a sense of purpose.

> *"It was just getting to be too much for me to always be in here, in the house. Stuck in the house, nowhere to go, nothing to do. When they introduced me to this program, it was the most wonderful thing that ever happened."*

"It makes you feel like you're still a part of society. You're connected, you're still connected to the outside world, and the way things are, this has been our means of connecting with other people because there was no meeting, no gatherings. To be able to set up a Zoom and be able to see your entire family and talk to everybody, it gives you a sense of being alive, that I'm not here in this wherever I live by myself."

Increased contact with family and friends

An important aspect of technology is being able to communicate with others. Specifically, we were interested in understanding how the iPad helped older participants to connect with their friends and families. A number of participants commented how the use of **video calling applications**, such as Facetime and Zoom, increased their contact with loved ones.

"Getting to see the pictures and interacting with them, like on FaceTime. Yes, it helped a lot."

"It really helped me connect more with my family members, especially my brother who is older than I am, and we FaceTime together now. We're looking at library stuff to do books together, reading on the iPad so I'm happy. I could talk to my sister in Texas."

"Yes. I've done some Zoom events with my family and I've also done FaceTime with them and it's been fun. One of my friends had a birthday and she had just moved and I didn't have her address so I made a happy birthday video and I sent it to her on her Facebook. She called me, she was so thrilled that I had taken the time to make a little video for her birthday."

Not only did these applications increase their contact, but it also made it easier for them to **communicate more freely with people in their network**. Mentors were able to teach participants effective and multiple ways to communicate with their friends and family through email, texting, or other message-type apps (e.g., Facebook messenger).

"I can communicate with my family better. I can communicate with my family that's not here, better than just using the telephone. I can communicate with them more and in different ways."

"It's helped because I can more easily email with both my family and my friends. I was using my iPhone before and I had difficulty in using the little letters and numbers and it's much easier. It's much more accessible on the iPad."

Overall, being able to connect with loved ones, especially during the time of the pandemic, was valuable for these individuals.

> *"To connect with my family and everything was great and everything with that and stuff. I learned by myself to communicate with them and so forth."*
>
> *"I am always moving to communicate with my family, much more now than when I was born because of learning how to use the devices."*

Offered new connections to community

A main issue for older adults as it pertains to technology is simply not knowing how to use the device. After participating in the program, many individuals reported that they felt **more capable and confident** performing tasks on their devices that allowed them access to new connection opportunities.

> *"It has made me a more capable and more determined person, that if the young people of today can, I can too. I feel more determined. I feel more confident to say, "I can or will try." If I see that I can't, I say, "I have to be able," and I try, and until I get it, I don't know, it's a very good satisfaction for me."*
>
> *"At least now I know what I'm doing when I want to interact with my friends far away."*
>
> *"I feel more confident. Well, I still get a little fearful with pushing buttons on the computer because, I'm thinking that I won't be able to undo it. Mostly, I'm getting beyond that. It's okay to explore, and to really find things out."*

Now that they are more confident in using technology, they communicated that they **now know where and how to find resources** that are available to them.

> *"There's a lot of resources on it. There's a lot of activities on it. I just enjoyed realizing that there was so much there to do."*
>
> *"I think the thing that was most valuable was finding out all the resources that are available and get the sense of and two things and then also the sense of community for meeting regularly with other seniors."*

"Well, what I'm saying is when I start exploring online with the iPad, all the activities are available. Obviously it's going to open up a lot of doors. That's something I'm looking forward to."

Now that participants are more comfortable using technology, participants discussed that they had **now joined social groups or activities** that are of interest to them.

"I've learned a lot to knit. As there are programs there, to knit, to do many crafts, many things."

"I've gone to some of the Cumberland Library activities, that they opened up to the general public and I've been to some of the activities in the city of Pawtucket at Slater Park. My friends and I check out things like the farmer's markets and that."

"I haven't joined too many social groups, but I did join an online book club"

"I go on activities for creating and selling things and looking up styles and things that I can do in the community on a weekly basis."

"Oh my God, I've been able to join podcasts, I've been able to join meditation classes, I'm a biggie for that. I also joined a group of live pastors. I've also joined the book club. I joined my walking club. Oh boy, what else? It seems I've joined so many things."

Other participants were now able to **participate in faith-related groups** that had been moved online due to the pandemic and have remained that way since that time.

"I have joined the activity only of the church, which as I see sometimes the Mass, because sometimes many people go to church and I do not like to go because of COVID, that has helped me. I see the activities they have."

"Well, I'm a minister, so I use it for Bible study. I use it for our services on Sunday morning so it helps me to be able to see some of the people in my church that I can't see right now so it's really great. Really great."

Older adults were also now able to **meet with their doctors and book their health appointments online**. This is important for those individuals who experience transportation issues or are not able to meet with their doctors in person each appointment.

> *"I make my doctor's appointments. I will also call him and communicate with the doctors."*
>
> *"The fact that I'm able to do this technology. It's not as difficult as I had thought. It's just made it so much easier, especially with my doctors' appointments."*

Overall, the majority of the participants repeatedly mentioned how the program contributed to **long lasting life changes** for them. From being more connected to the community, connecting with their loved ones, joining new social groups and activities, to just being able to continue their normal life through technology, they were eternally grateful for the opportunity to partake in the program.

> *"It just makes me feel more energetic and more interested in my life because I feel like I have the support of somebody, and I enjoy having meetings, looking forward to seeing and hearing your smile and nice voice. It gives me a chance to see more of life."*

Program Evaluation Themes

In addition to asking participants about their feelings related to connectedness and health, we also asked participants a series of questions about their overall experience, their favorite or what part of the program they found most valuable, what more they wish they had learned, continued learning, and if they had any program suggestions. See the table below for the number of comments in each theme and sub-theme related to these program evaluation elements.

Table 13. Overall Experience by Number of Comments

Overall Experience	Number of Comments
Favorite/Valuable part of program	
Connections with mentor	115
Zoom meetings	50
Other	70

What more they wish they had learned	
Happy with what learned	78
More about cyber-security issues	2
Wish more people/friends could join	12
Program suggestions	
More one-on-one meetings	23
More patience	8
Never want it to end	45
Continued learning	
Learned everything I needed to know (now feel prepared to do things themselves)	14
Always want to learn (Don't know what I don't know)	87

Throughout the phone interviews, we aimed to understand the overall experience of participants in the program. Many participants mentioned that they were just grateful to be able to participate in the program at all. As mentioned previously, the program was able to connect them with their family and friends as well as have long-lasting impacts on their everyday life. On the other hand, some individuals were a little more reserved about engaging with other participants in the program. Many did not participate in group Zoom meetings due to hesitation in asking questions as they did not want to embarrass themselves in front of others. We continue to recognize that most people prefer one-on-one sessions, so we do not require participation in the group meetings.

We also asked participants what their favorite or most valuable part of the program was. One of the most common responses to this question was "connecting with my mentor." Participants consistently commented on the connection they were able to make with their student mentor outside of the technology training. Seeing each other (even if it was virtually) at least once a week allowed them to sometimes form a friendship with one another. Additionally, some older adults enjoyed joining the weekly group zoom meetings and learning new things during the classes.

Of course, there is always more that can be done in these training sessions. We wanted to understand and identify what participants wish they had learned during their time in the program and any suggestions they had for the future. Most participants were content with what they had learned thus far in the program and never wanted it to end. Some participants mentioned how they wished they learned more about cyber-security issues. We have now incorporated how to identify

spam and phishing emails during the first few training sessions. Additionally, participants suggested more one-on-one training sessions. We continue to offer one-on-one check-in meetings even after participants complete the program; we encourage current student mentors to reach out to past participants and offer support when they have time after helping any new iPad participants.

Lastly, we asked participants if they were interested in continuing to receive technology support in the future if the opportunity was available. Most individuals noted that they would enjoy continuing to receive support because they want to continue to learn. Some participants mentioned that they "don't know what they don't know" and felt there was always room for improvement. On the other hand, some individuals were confident in what they had learned. Participants mentioned that they were content with what they learned and now felt prepared to complete tasks and use technology on their own.

Peer Trainer Information

Train-the-Trainer Program Development

Dr. Leedahl identified a list of eight older individuals to serve on an advisory group (some current iPad program participants) to help develop the "train-the-trainer" curriculum. Materials used to train student mentors were sent to the advisory group. The group then met with Dr. Leedahl for an hour and a half meeting in which the materials, content, and key training points needed for peer mentors were discussed. Dr. Leedahl and Kristin Souza then developed the peer mentor training program based on notes taken from the meeting. We shared the training program with the advisory group one more time for review and discussion, and each member expressed enthusiasm for the potential of this program. *(See Appendix for Program Outline and Checklist)*

Pilot Plans

We intended for a small pilot of the peer mentor program to start in January 2022. We contacted about seven older adults (some from each of the pilot communities) who we felt have been strongly involved in the program and have engaged in all opportunities given, including the group Zoom calls. Unfortunately, no one was interested or willing to take part in the training and serve as a peer mentor. We also reached out to the senior center partners to potentially identify a participant they felt would like to engage in this peer mentor program. Unfortunately, these senior center partners also were not able to identify willing participants to partake in the program.

Through our outreach efforts, we have experienced recruitment of willing participants as a barrier to creating a successful pilot. In order to execute this initiative successfully, we decided that we need to hire a dedicated individual who can be committed to the recruitment, implementation, training, and monitoring of the peer mentor program. We also believe forging relationships with Senior Corps, Retired Seniors Volunteer Program (RSVP), or similar volunteer organizations would be critical to finding dedicated volunteers willing to meet with participants on-site on a regular basis. We wrote in a student position in the new proposal with OHA to help with this.

Lessons Learned

Based on our experiences with program implementation and in considering our quantitative and qualitative research findings, we identified a number of lessons learned related to implementing and evaluating the URI Cyber-Seniors digiAGE iPad pilot program:

I. The program has contributed to increased technology use, digital competence, and quality of life & reduced social isolation and loneliness for participants.

Overall, the program is meeting its goal of enhancing technology use and social connectedness for participants. We, of course, need to be cautious in interpreting the findings because we did not have a control group, and the pandemic itself (meaning people gradually increased or resumed their normal activies) may have contributed to the measures analyzed in the study. However, we can confidently state that our program participants, as a whole, had improved scores from the pre-survey to the post-survey, and thus the program at least contributed somewhat to better outcomes for participants.

Our analysis shows that participants increased their technology use and digital competence from pre- to post-survey, thus showing the participants in the program now use their devices, especially their new iPads, a lot more and feel more confident and competent with their technology knowledge. In the psychosocial area, participants reported better quality of life and lower levels of social isolation, loneliness, and depression from pre-to post-survey, and the qualitative results support that participants believed the program contributed to enhanced quality of life and better health behaviors and outcomes. Because the qualitative results support the quantitative findings we believe this strengthens the confidence of the findings from the pilot study.

II. Community/university partnerships in Rhode Island can be effective and supportive.

Because we were a program that addressed such a significant community need (e.g., the need for digital inclusion of older adults and the need for reduced social isolation among older adults) and had early success working with community partners, we now have more interest in partnering with us than we have the capacity to support. We believe this is indicative of success regarding community/university partnerships, so we hope our lessons learned could aid others.

We have learned that each community partner has their own methods and processes for operating, and the community partners have learned that higher education (and URI

specifically) have our own schedules, demands, and requirements that we must meet. While these demands do not always align, we have learned that motivated individuals involved in these community/university partnerships can remain motivated when they believe their organization and its participants or its students will benefit in meaningful ways. When the partnerships believe we are all part of a team working to help participants, a program like this can be supportive of one another and thus successful in the long-term. From a university standpoint, we learned there is a need for more investment in student supervision, and this is why we built in new graduate student coordinators into the second year of OHA funding. From a community partner standpoint, we learned that participants need someone who can more easily answer questions or address concerns, and thus we are hoping the new graduate student coordinators can aid with this as well. In working with community partners, it seems that sustaining the program over the course of the year helps to ensure people can get help as long as they can wait for the students to be available. This also helps the community partners to keep the program as part of their overall organizational offerings, which helps the program not be seen as a one-and-done initiative.

III. The program must consistently work to balance all stakeholder needs.

This program offers mutual benefits for all stakeholders involved including community partners, URI faculty/staff, and students. Community partners are seeing the need for technology support for older adults but often do not have the capacity themselves to meet the need. Older adults appreciate the program because it helps them gain technological knowledge and skills while getting to know the younger population, and they can participate in the program at their local senior center or over the phone/through virtual ways. The program benefits faculty/staff at URI who want to offer unique, meaningful student experiential education opportunities for students and conduct research studies to advance scholarship related to intergenerational technology programs. Students, eager for internship and service learning opportunities, also benefit from this program because they can complete their hours and gain professional skills. Because there are mutual benefits for all involved, this program continues to flourish and meet the needs of all engaged parties.

Trying to keep everyone happy and balancing the needs of the four groups of stakeholders is the most challenging. For example, it can be challenging to ensure students are getting all the hours they need, it can be difficult to ensure older adults are starting the program at the same time that students are trained and ready to meet with them, and it can be time-consuming to make sure equipment is ready and delivered when it is needed. While we have consistently found ways to make it work, we are hoping that having graduate student coordinators will make it easier to implement this program state-wide and continue to balance all the stakeholder needs. Potentially, the coordinators can be the bridge between

URI, community partners, students, and older adults – ensuring that most questions are addressed and needs are met.

IV. We strongly believe that we have created a robust student experiential education experience through this program that involves recruitment, training, and ongoing support.

The combination of the required training at the beginning of the semester, checklist, Brightspace page (URI's learning management system), regular check-in process, and system for tracking hours is working and is now manageable each semester. While we make revisions each semester based on student requirements or needs, our system can be easily modified to ensure sustainability. However, we have learned that it is necessary to identify a paid supervisor to monitor student progress and ensure a high-quality program.

Recruitment has become more streamlined overtime as we have been able to create a detailed job description for paid and unpaid positions that are posted within Handshake (URI's job & internship platform), and circulate the descriptions amongst colleagues with a vested interest. Additionally, the service learning requirements within Dr. Leedahl & Dr. Estus's courses also allow for us to estimate the amount of student engagement each semester. The need for students who are bilingual, particularly Spanish, is ever more prevalent to effectively communicate with this population in the community. While we have managed to recruit a few Spanish speaking students per semester, consistent recruitment of bilingual students has been the biggest challenge despite targeted recruitment efforts. With the 2022-2023 funding through the Office of Healthy Aging, we will be able to address these challenges by hiring paid, Spanish-speaking students to work with these clients each semester.

During the height of the COVID-19 pandemic when most places were closed to in-person programming, students were interested and available to serve as mentors for this program because we offered remote opportunities and flexible scheduling. Participation in the program offered students an option for completing their required internship or service learning hours, so we easily found students willing to engage with us (often unpaid). Now that most in-person programming is now fully available again, we are finding fewer students interested in working with the program. We are having to creatively recruit students for internships, offer more paid opportunities, and limit how many new iPad clients we include in the program to ensure we have enough student mentor support.

V. Senior/community center partnerships work well for recruiting and supporting older adults.

As a whole, this program seems to be meeting the needs of the older adults it serves. From a recruitment standpoint, having community partners recruit participants through their regular channels (e.g., newsletters, emails, flyers) has proved quite effective. Furthermore, because many older adults have had success and appreciate the program offerings, word-of-mouth has become one of the biggest recruitment tools for us. This, however, does not mean that every person who has experienced the program is happy or fully understands how the program works. We intentionally created a program that can be individualized to meet the diverse needs and learning styles of the older adults included, but inevitably there are older adults who have higher expectations than we can meet or have greater challenges than what we can handle. We believe that the new graduate student coordinators can help and that the longer the program is around, the greater the understanding will be of what the program is and is not.

VI. The research methods and processes have proven to be effective and sustainable.

Using phone interviews proved to be an effective method for collecting pre/post data from the older participants, and this helped to build rapport with participants as well as helped to avoid missing data. In the past, we relied on either paper/pencil surveys or online surveys, and both methods often led to copious amounts of missing data or large delays in obtaining the information. With the current collection method, basic analysis can be done relatively quickly, and more extensive analysis can be done without as much concern over missing data.

Some of the older participants have communicated dislike for some of the questions on the survey, finding some of the questions about social isolation or mental health to be too intrusive or sensitive. When we encounter these situations, Dr. Leedahl has worked with students to help them explain the purposes of this research or how we chose standardized measures to evaluate outcomes (and thus can not alter the wording of the questions), which does seem to help people understand why we are asking these questions. We, of course, also emphasize to participants that they can choose not to participate in the program/research project, and that they can drop out of the program or the research study at any time.

Offering the iPad as an incentive for completing the pre- and post-survey has worked well and must be enough of an incentive for participants to be willing to take part in the research project. We also believe that having the project be a part of a research study is better than simply giving the iPads to people, as this ensures they are committing to the program and to using their iPad for the most part. We have relatively low rates of disenrollment or

disengagement, so we are confident that we have found the right balance of research participation, incentives, and program elements.

VII. We began rolling out the program state-wide in January of 2022, and we are continuing to gain momentum.

Starting in January 2022, we began enrolling participants from additional sites, and by June 2022, we now have a total of 12 communities taking part and enrolling participants in the URI Cyber-Seniors digiAGE iPad program and research. This includes: Warwick, West Warwick, Providence, Central Falls, Pawtucket, North Kingstown, South Kingstown, Narragansett, Jamestown, Newport, East Greenwich, and Charlestown. We also have 3-4 additional communities who have shown interest. We will be spending the next couple of semesters establishing processes that work with each partner and ensuring we find enough student mentors for each site. A van Beuren Foundation grant will be finished at the end of December 2022, so the specific program for Newport and Jamestown will have to transition into being part of the current program.

Furthermore in the next couple of years, we need to make decisions about the future of the program. For example: should we expand the student mentor opportunities within different URI majors, classes, or programs? We mostly work with primarily Human Development & Family Science and Pharmacy majors now. Should we expand to other universities or colleges within Rhode Island? Will we be able to continue offering iPads to older participants? Should we offer a model where older adults or organizations pay for iPads, Hotspots, binders, and student mentor help? These are some of the questions we will work to respond to in the upcoming months.

Program Funding & Sustainability

The primary source of funding for this pilot project came from OHA in the amount of $199,301. This included the purchasing of the devices, the materials, and program administration costs. In addition to the funding from OHA, the URI College of Health Sciences contributed $12,000, which was used to purchase the first 75 Hotspots needed for participants in the program. We also secured funding from Blue Cross Blue Shield of Rhode Island for $20,000, which allowed us to create robust interprofessional training opportunities for students from different majors. To aid with analyzing the qualitative data, Dr. Leedahl secured a $3,000 grant from the URI Research and Economic Development Office.

To begin rolling out the program state-wide starting in January 2022, we secured a $50,000 grant from the RI Housing organization. In addition, we received a $76,876 grant from the van Beuren Charitable Foundation to implement the URI Cyber-Seniors digiAGE iPad Program for Newport County. For this, we have partnered with Newport Housing Authority, Edward King House, Jamestown Senior Center, and Jamestown Housing Authority to implement the project. As part of this, we hired a Project Coordinator solely dedicated to administering the grant in these areas.

Most recently, we worked with OHA to identify funding for Phase 2 of the project, which we began administering in the Summer of 2022. This will enable the URI team to continue state-wide roll-out efforts, disseminate findings from the pilot, analyze outcomes from the state-wide implementation efforts, and implement the peer mentor program. We also secured funding through the City of Providence ($20,000) to ensure continued support to older residents from Providence, and this funding will continue through 2023.

Finally, we are continuously seeking new funding sources and identifying ways to sustain the program over the long-term, and we continue to apply for funding when funding streams become available. We are also working to advance research in this area by partnering with higher education partners from other states to help implement similar programs across the country, and we continue to work with the Cyber-Seniors Organization to enhance their efforts and resources. We also hope to identify some federal funding mechanisms, such as National Institutes of Aging (NIA) or National Science Foundation (NSF) to help create an intergenerational center or aging research center that enables us to continue advancing projects like this and research in this area. We also hope to continue partnering with the Rhode Island Office of Healthy Aging for many years.

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