Co-designing ICT Strategies with Older Adults

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Co-designing Participatory Strategies with Older Adults:
Reducing Perceived Risk and Promoting Digital Inclusion

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Table of Contents

Exective Summary

0.1 Overview

As the COVID-19 pandemic has highlighted, digital engagement is crucial for fostering social inclusion for older adults, with the capacity to navigate risks and take up information and communication technologies (ICT) critical to their wellbeing. However, perceived risks are one of the main reasons many older adults do not engage with ICT and the digital economy. A lack of understanding and ability to navigate risk can limit their online interactivity. Our report explains the perceived risks that affect older adults the most and outlines co-designed strategies that respond to their lived experiences of ICT – connecting practices with perceptions.

In addressing such concerns about better equipping older Australians to engage with the digital economy, this research has adopted an innovative multidisciplinary approach in collaboration with the University of the Third Age (U3A) Network Victoria and the City of Whittlesea, as seen throughout the project's four phases. The initial 'exploring and understanding phases' through 2021 focused on examining risk perceptions amongst the U3A Victoria cohort, analysing findings from a membership survey, and investigating lived experiences through exploratory interviews. The following two phases – co-design and dissemination during 2022 – saw the research team collaborate through workshops with several local groups to create strategies and tools that help inform the practices of older adults and reduce their perceptions of ICT risk.

0.2 Key Findings

The Shaping Connection team has uncovered older Australians' perceptions of ICT risk and explored ways of realising and providing strategies to overcome them. Our project elaborates on the following key insights:

- Our work reinforces that the pandemic has highlighted and amplified the inequality of perceptions, access, and digital literacy around ICT practices. Bringing issues of digital divide to the fore, our survey has captured the importance of digital literacy in the face of prevalent scams, with the interviews enhancing our understandings of these lived experience of ICT use in later life.

- In co-creating strategies with older adults to address their perceived risk with ICT, we have documented how an approach which addresses risks through determining an individual's level of digital literacy (beginner/experienced) and their preferences for accessing support (individual/relational) can be effective in responding to issues in older adults' terms, personalising their strategies and providing autonomy for their learning experiences and involvement in the digital economy.

0.3 Recommendations

Developing on our findings, the following recommendations seek to support seniors, organisations, and policymakers in expanding their understandings of the ICT needs, goals and capabilities among older adults. This means recognising the intersectionality of digital exclusion, tailoring learning, and sharing to consider gender, and ethnic background, through moving beyond tokenistic actions to participatory methods of bringing the voice of older Australians to the fore. In light of this, the following recommendations are summarised to support these three perspectives to address ICT risks in later life and enable opportunities for seniors to engage the digital economy:

- For seniors, we ask them to consider how digital literacy can be meaningful and useful to them, to seek to build self-advocacy for ICT use and locate organisations and opportunities which enable them to do so, so they can form goals and intentions with these technologies. As we document, this will likely see deeper reflection and consideration for the experiential and intangible ways that they seek to use ICT devices and services, to foster the necessary skills through a focus on practice and in group environments, which make autonomy, independence and empowerment possible through peer-to-peer sharing and participatory means

- For organisations, this poses an opportunity to build the digital literacy of seniors, by drawing on their capacity as advocates and platforms, to support responsive initiatives that focus on lifelong learning. This responds to our findings that a combination of student-centred learning that incorporates peer learning is essential to offering a socially collaborative environment, but this needs organisations to bring seniors into the planning of these initiatives, forming culturally considered courses and classes that respond to the ICT challenges seniors face. We also highlight the role of social connectors in enabling the implementation of these initiatives.

- To policymakers, we recommend enhancing efforts to make the digital economy accessible through facilitating the catalysts that work to make seniors more responsible and informed online. This means moving beyond long-held notions of the digital divide, which emphasis a literacy chasm and can stigmatise individuals, to realising the diversity of older adults' ICT skills and interests that forms a spectrum instead, drawing on a segmented approach that targets different groups and their specific needs. These shifts in thinking require not only a move to funding research beyond scams and security risks to the intangibles and experiential concerns of seniors, positioning social connectors as community leaders that can support adoption, learning and use on their terms. Social connectors are individuals who sit at the centre of social and collaborative networks by fostering connection between different individuals, community, or group members.

1. Introduction

1.1 Purpose

The purpose of this project was to promote the digital inclusion of older Australians by addressing their perceived risks of ICT use. Digital exclusion is a significant threat to the wellbeing of older adults. As the COVID-19 pandemic has highlighted, digital engagement is crucial for fostering social inclusion. Improving older adults' engagement with Information and Communication Technology (ICT) has never been more important as a pathway to promote social inclusion and foster participation in the digital economy. ICT is a broad term. It refers to all communication technologies and includes all media applications and services enabling you to access, retrieve, store, transmit, manipulate information, and transact in a digital form. ICT supports social inclusion by creating opportunities to connect, providing a platform for entertainment, learning and access to key products and services.

Perceived risks are subjective beliefs about potential harm or the possibility of a loss. Perceived risks are one critical demotivator for older adults' engagement with ICT and the digital economy. Thus, this project sought to help older adults to increase their digital inclusion by addressing the perceived risks they experience when engaging with ICT. To do so, we adopted an innovative, multidisciplinary approach that focused on co-designing strategies with older adults to consider their ICT experiences – link practice with perceptions.

1.2 Background

This research is part of *Shaping Connections* – an ongoing research collaboration between the University of the Third Age (U3A) Network Victoria and RMIT University's School of Economics, Finance and Marketing. The program investigates how technology use supports older adults' connectedness and enhances social inclusion and participation. It brings together academics and stakeholders with expertise in ageing, media, design innovation, social marketing, consumer research and wellbeing.

1.3 Research Objectives

This multidisciplinary and multimethod project focused on understanding older adults' perceptions of risk around ICT use by:

- exploring and quantifying the types of perceived risks associated with ICT and the influence on ICT use and engagement in the digital economy

- understanding the lived experiences around ICT practices and risk perceptions through an ethnographic approach

- co-designing strategies with end users and stakeholders to reduce perceived risk and improve digital engagement

- disseminating research findings, co-designed strategies, and the digital resource to encourage the uptake and scaling of findings and strategies.

1.4 Context

Concern about security is one of the critical reasons why older adults don't engage with ICT and the digital economy (Mitzner et al., 2010; Wu, Damnée, Kerhervé, Ware, & Rigaud, 2015). Existing research has identified and assessed risks involved in ICT engagement and built programs that outline these risks and help older adults develop appropriate skills. However, older adults often base their security concerns on perceptions of risk (Boise et al., 2013; Knowles & Hanson, 2018) and these perceived risks pose barriers to engaging with ICT (Young, Willis, Cameron, & Geana, 2014). Existing programs have not acknowledged that perceptions of risk can be a significant barrier to participation.
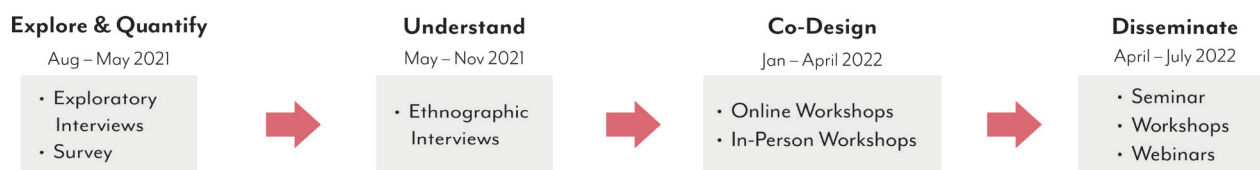
2. Project Summary

Explore & Quantify	Understand	Co-Design	Disseminate
Aug – May 2021	May – Nov 2021	Jan – April 2022	April – July 2022
• Exploratory Interviews • Survey	• Ethnographic Interviews	• Online Workshops • In-Person Workshops	• Seminar • Workshops • Webinars

Figure 1. Project phases and components

2.1 Overview of Phases

1. Explore and Quantify

In this initial phase, we explored the language, contexts, and meanings associated with risk perceptions and ICT use, and quantified the types of perceived risks associated with ICT and their influence on ICT use and engagement in the digital economy. The exploration led to a survey instrument and 22 video vignettes:

- *ICT Video Vignettes*
- *Survey instrument*

2. Understand

By understanding the lived experiences around ICT practices and risk perceptions through an ethnographic approach, we focused on uncovering discrepancies between practice and perception. Ethnography places a human face on data through rich real-life stories and emotional behaviour. In this phase, we revealed critical stories and insights and shared them with stakeholders. The results of this phase were compiled in our first report, an academic paper, and an article for the general public (listed below):

- Report: Reducing Perceived Risk and Promoting Digital Inclusion for older Australians

- Academic Paper: Understanding factors influencing seniors' anxiety in using ICT. *(Working Paper)*

- General Public Paper: Technology: Strengthening digital social inclusion.

3. Co-design

This phase focused on developing co-designed strategies with end users and stakeholders to reduce perceived risk and improve older adults' digital engagement. This phase was conducted through a series of co-design workshops, in which older adults were supported in enriching an ICT persona and mapping out their response to several problem scenarios. This led to the development of a digital booklet to promote digital inclusion and support older adults with strategies to increase their digital confidence to connect. This was shared in the workshop series for feedback. The workshops themselves resulted in a digital resource containing tools, including a risk assessment simulation, guidelines for understanding perceived risk, and a set of strategies.

- *Online Resource Tools*
- *Seniors Workshops Series*
- *ICT Strategies Booklet*

4. Disseminate

Focusing on education and implementation, this phase included the dissemination of research findings, co-designed strategies, and the digital resources to end users, organisations working in the older adults' digital inclusion space, and the academic community. To encourage the uptake and scaling of findings and strategies, we delivered dissemination seminars, implementation workshops and a webinar.

An example of a dissemination webinar explaining the research and tools to the general public and stakeholders can be found here: *ACCAN Project - April 28th Webinar.* The results of this phase were compiled in two academic paper and a conference proceeding:

- Academic Paper: Understanding factors influencing older adults' Desire to be more proficient in using ICT *(Working Paper)*

- Academic Paper: Digital Aging Futures *(Working Paper)*

- Conference Proceeding: Seniors' Internet Skills, Risk Perception & Digital Participation *(Working Paper)*

2.2 Research Partners

University of the Third Age Network Victoria

U3A provides lifelong learning to people who are retired or semi-retired. There are 104 U3As throughout Victoria, offering courses and activities to over 39,000 members who make up the U3A Network Victoria. U3As provide opportunities for retired or semi-retired people to engage in later life learning, meet new people and share their knowledge and skills with others.

City of Whittlesea

Through the City of Whittlesea Positive Ageing Strategy, the Ageing Well department promotes the many opportunities that an ageing population brings to society. In particular, it promotes the vast benefits for individuals and the community when people continue to be active, healthy and participate in the community as they age. The Ageing Well department hopes to activate opportunities and choices to improve wellbeing for people as they age and generate a positive change in the way residents live their lives.

Australian Communications Consumer Action Network (ACCAN)

ACCAN is Australia's peak communications consumer organisation representing individuals, small businesses and not-for-profit groups as consumers of communications products and services. ACCAN focuses on goods and services encompassed by the converged areas of telecommunications, broadcasting, the internet and online services, current and emerging technologies.

2.3 RMIT University

Consumer Wellbeing Research Group

The RMIT Consumer Wellbeing Research Group is a multidisciplinary group committed to providing research and insights into consumer behaviours and influences that facilitate or inhibit consumers' health, wellbeing, and quality of life. The group's mission is to address real-world issues, primarily through a social marketing lens, using rigorous methodologies to produce insights, advice, and interventions that lead to economic, social, and environmental impact.

Consumer Culture Insights Group

The Consumer Culture Insights Group (CCIG) is a group of scholars who study consumer behaviour and emerging markets using research methods based on interviews, observations, and focus groups. CCIG examines how lived experiences offer important insights into consumers' values, beliefs, behaviours, and identities, and the ways consumers buy and use products and services. The CCIG also investigates how changes in everyday consumer culture offer insights for the future.

Digital Ethnography Research Centre

The Digital Ethnography Research Centre (DERC) applies cutting-edge ethnographic approaches to better understand how digital tech impacts our present lives and potential futures. DERC's projects often involve local communities, with expertise ranging from studies of everyday lived experience, workplace and organisational analysis, policy and strategy analysis, design ethnography, co-design workshops, and creative collaborations with communities of practice. The Centre has a strong international base and mission to impact lives, policies, and education methods globally.

3. Key Findings

3.1 Digital Literacy

During phase 1, survey respondents were asked to rate their knowledge and skills on a scale from 1 to 7, regarding five digital literacy factors (van Deursen et al., 2016): technical skills (e.g., download a photo, open a downloaded file, adjust privacy settings), information and search skills (e.g., use of search keywords, finding websites, ease of using a search engine), mobile device use skills (e.g., downloading apps, track usage cost, sync mobile device with other ICT), social and sharing skills (e.g., what to share and not share online and with whom, block people); and content and creative skills (e.g., design a website, manipulate images, create content).

Overall Digital Literacy

The survey respondents had the highest digital literacy mean scores for social and sharing skills, and technical skills (Figure 2). The lowest digital literacy score was for content and creative skills.
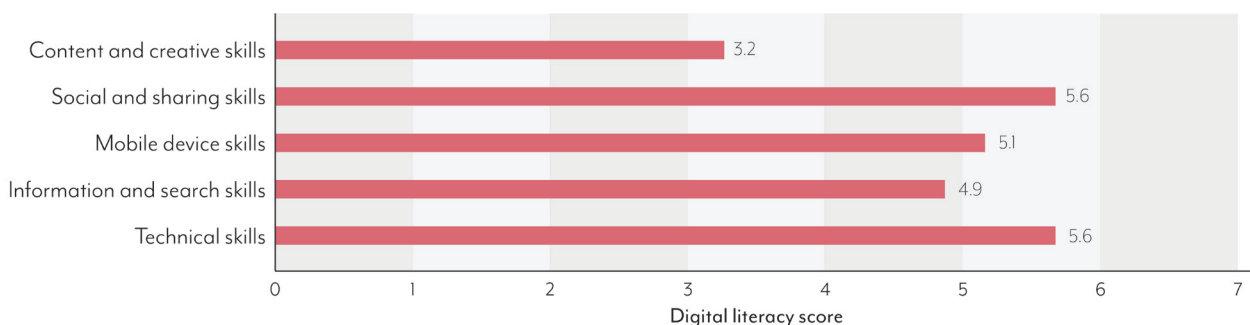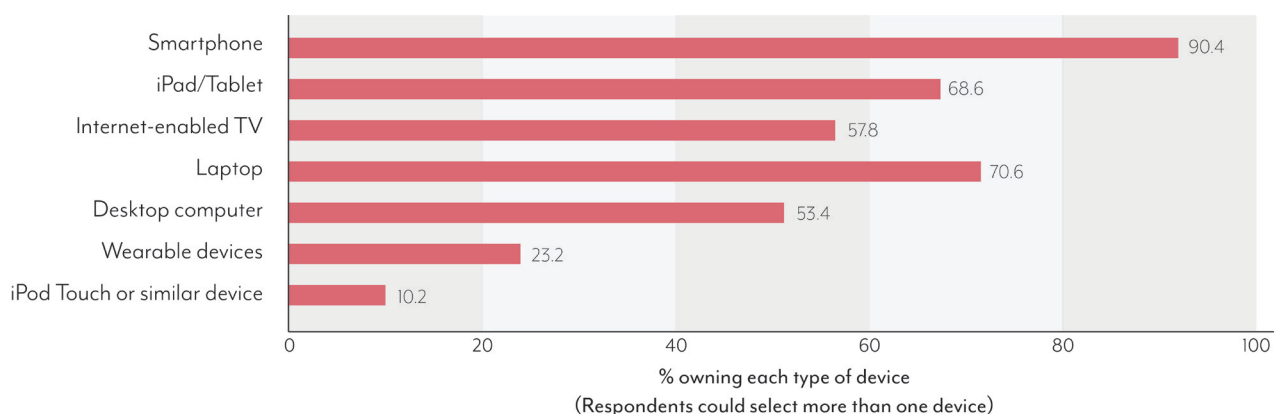
Results show that digital literacy forms a significant factor influencing older adults' ICT use. Analysis also found that age, gender, and relationship status all played a role in the level of digital literacy. We found that those under the age of 69 reported a higher level of skill and knowledge across all factors than their older counterparts. Male participants reported higher digital literacy, being more comfortable with technical, mobile device, and content and creative skills than female participants. Finally, respondents defining themselves as being in a coupled relationship felt they had a higher level of skill and knowledge across all factors compared to single older adults.

Device Ownership

When responding to their ICT device ownership and level of use, personal access to devices corresponded to the frequency of ICT use: almost all survey respondents owned a smartphone (90%) and on average used it daily, while those who owned an iPad or tablet (69%) used it on average about once per week (Figure 3).

Figure 2. Digital literacy

Figure 3. Types of ICT devices owned

Device Use Frequency

Digital literacy was also related to the frequency of device use; those with high digital literacy were significantly more likely to use more devices. This trend continued regarding the influences on ICT use, with those with higher digital literacy consistently more confident, positive, and knowledgeable of ICT.

Digital Literacy and Influence Factor

To better understand acceptance of ICT and factors that shaped engagement with ICT, we drew on extended Technology Acceptance Models (Figure 3). We compared respondents with higher and lower digital literacy and found that older adults with low digital literacy had a significantly greater desire to increase their proficiency with ICT.

Those with lower digital literacy were also more worried about not keeping up and remaining current with ICT, felt that they had fewer resources to engage with ICT, had higher levels of anxiety about engaging with ICT, and less perceived ease of use associated with ICT.

Those with lower digital literacy also felt that they had less self-satisfaction and social connection through using ICT compared to those with higher digital literacy, although the means were high. Significant differences were also found for attitude towards ICT and perceiving less usefulness in using ICT with those having lower digital literacy having more negative attitudes and seeing less usefulness in using ICT.
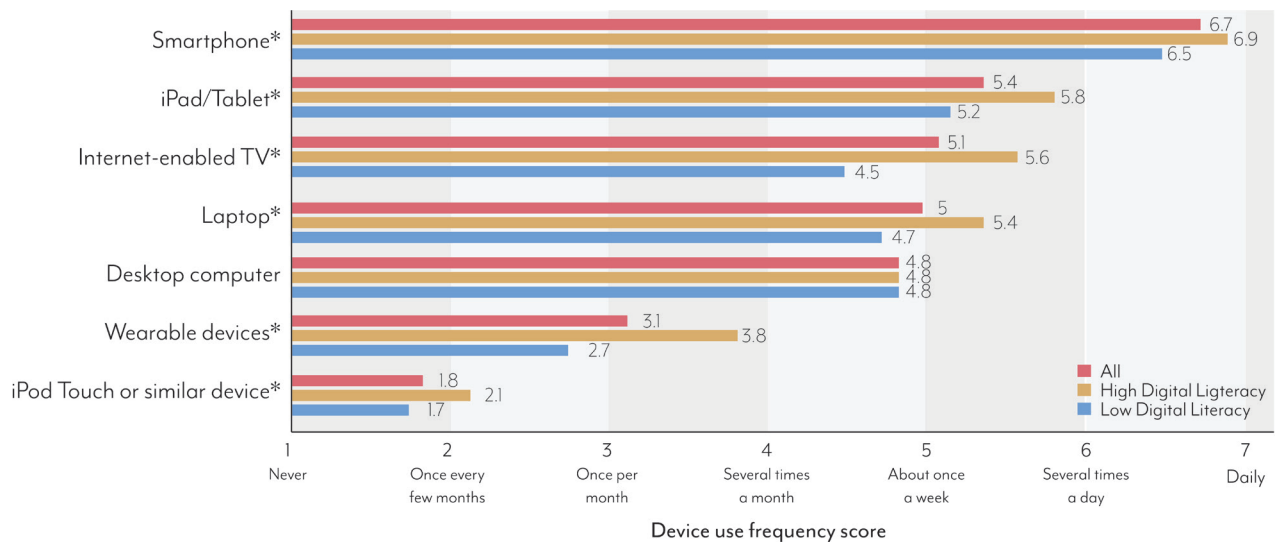

Figure 4. Device use frequency scores for people with high or low digital literacy

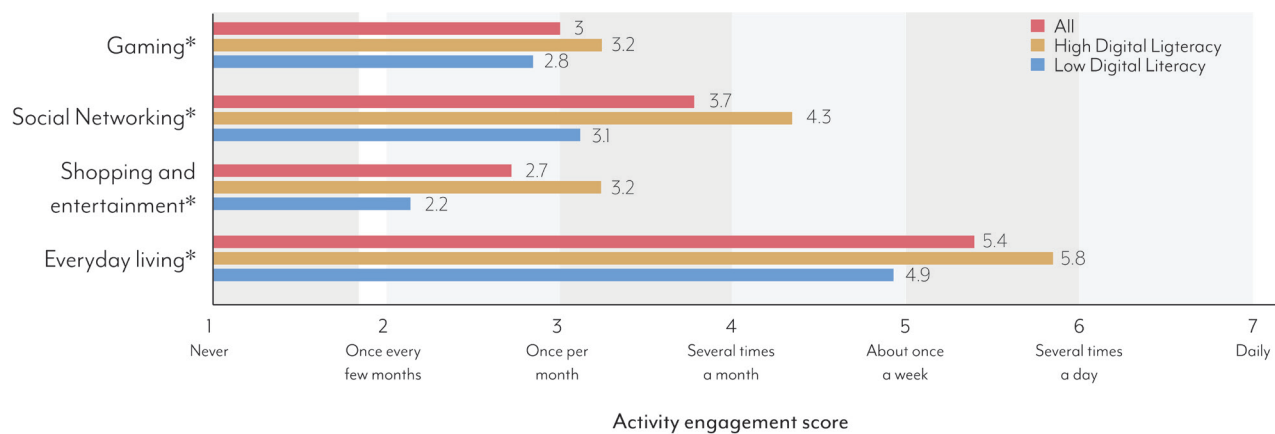**t-test indicates statistically significant difference at 95% confidence level*

Figure 5. Activity engagement mean factor scores and digital literacy

Digital Literacy and Activity Engagement

The research examined whether digital literacy was associated with higher levels of engagement in different facets of the digital economy, including everyday living (e.g., google searching, emailing, banking/bills), shopping and entertainment (e.g., forms of online shopping, using online books/magazines/movies/TV), social networking (e.g., chatting using apps, uploading content for friends and family), and gaming (e.g., playing standalone or connected/networked games online).

Digital literacy (high versus low) was found to be associated with higher engagement in the digital economy, including more frequently used ICT for all engagement activity types compared with people ho scored low on digital literacy.

3.2 Experience of Scams

Scams and Digital Literacy

Respondents with both high and low literacies were exposed to scams – only 27% of the survey respondents did not experience any of the scams listed (Table 1). Survey respondents with higher digital literacy were less likely to have experienced an email scam that requested their personal information (46.1%) compared to people with low digital literacy (54.6%).

Generally, less than 10% of respondents experienced a shopping- or service-related scam (Table 2). A low rate of internet shopping amongst respondents may indicate the experience of being tricked or defrauded in the process of shopping online. As online shopping increases, older adults are more likely to be vulnerable to this type of scam due to being more trusting of legitimate organisations.
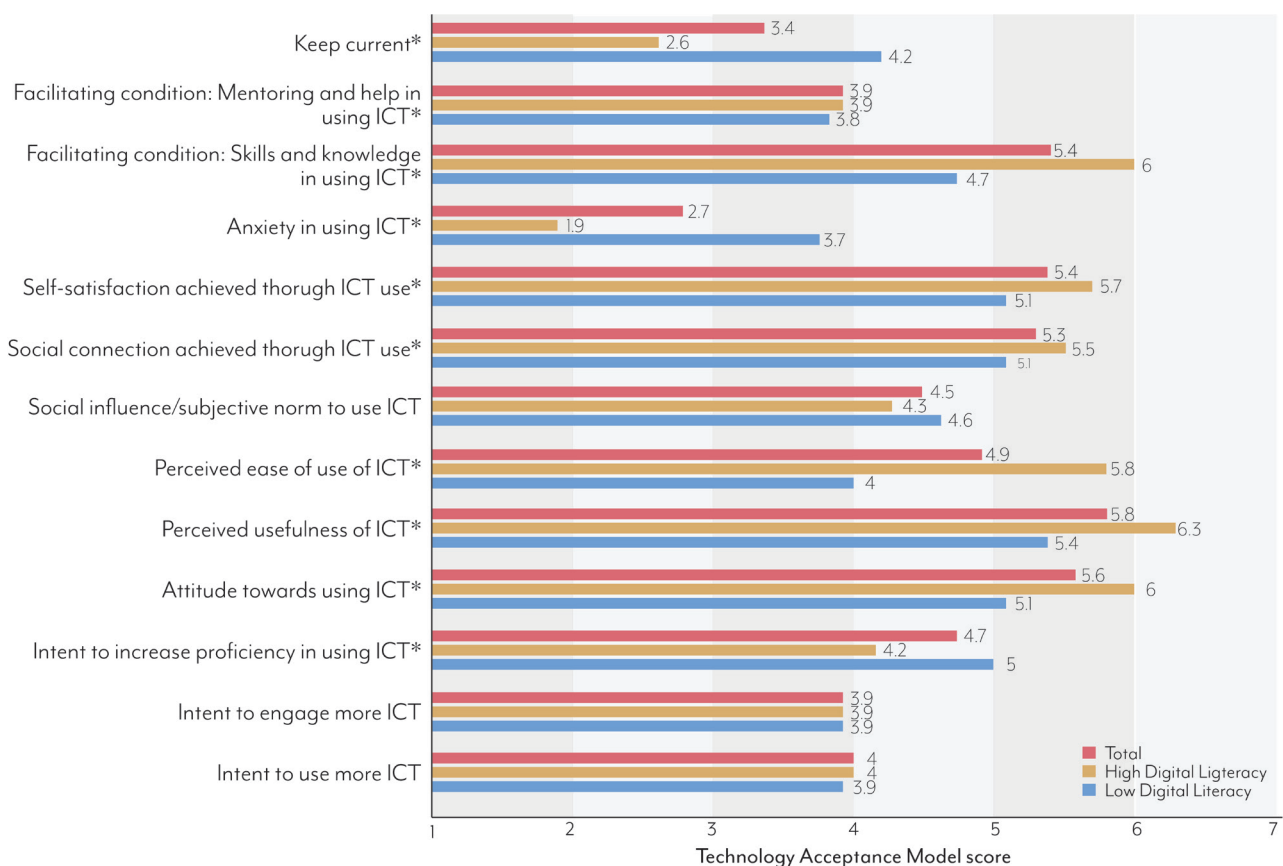

Figure 6. Technology acceptance and influence factors by digital literacy

* t-test indicates statistically significant difference at 95% confidence level

Table 1. Experience of scams or fraud by digital literacy

indicates comparison significant at p < .05.

Overspending Risk*	High Digital Literacy	Low Digital Literacy	Total
Victim Cost: Undertermined			
You were asked by email (or other online means) to provide (or confirm) personal information by someone pretending to be from a legitimate organisation such as a bank, telephone or internet service provider, or government department.	46.1*	54.6*	50.6
You were approached by email (or other online means) and were informed that you had a computer or internet problem. Then you were asked for your personal details and your bank or credit card details to have the problem solved.	47.7	47.9	47.6
You were contacted by someone pretending to be from a legitimate organisation, such as a bank, internet provider or government, who claimed there were problems with your account or other documentation and threatened you if you did not pay to resolve the problem.	44.4	45.4	45.5
You received notification of a lottery win or a competition win but were informed you would need to pay a fee or buy a product in order to collect your prize.	33.2	34.6	33.9
You were promised you would receive a good, a service, a rebate, or an important investment gain if you transferred or invested money.	15.8	19.7	18.2
You accessed a website and were informed that you had a computer or internet problem. Then you were asked for your personal details and your bank or credit card details to have the problem solved.	17.4	15.8	17.1
You received a fake invoice for products that you had not ordered, and you were asked to pay the cost.	11.2	14.9	13.4
Victim Cost: Explicit			
You ordered free or relatively cheap products or services, but it turned out you had been tricked into a costly monthly subscription.	11.5	8.5	10.5
You bought what you thought was a good deal, but the goods/services turned out to be fake or non-existent.	9.5	7.3	8.8
You bought what you thought was a good deal, but you never received the goods/service.	6.6	5.9	6.6
You bought tickets for an event, concert, or travel, but it turned out the tickets were not genuine and/or you never received them.	2.3	1.7	2.3
I have not experienced or been caught out by any scam or frauds of this nature.	28.9	25.9	26.7

What we found was that generally, less than 10% of survey respondents experienced a shopping or service-related scam (Table 2). This low rate of internet shopping amongst respondents may indicate the experience of being tricked or defrauded in the process of shopping online. If online shopping increases, older adults may be more vulnerable to this type of scam due to being more trusting of legitimate organisations.

These findings demonstrate that scams are not only objective challenges to be dealt with, but they also carry an important experiential dimension grounded on the lived experiences of these older adults. However, scams are not the only way in which older adults experience threats related to ICT use. Here, the notion of perceived risk helps capture the different, experiential dimensions to ICT use that also pose threats to older adults, playing into individuals' decisions, levels of digital literacy and willingness to engage with ICT. The next sections examine the various dimensions of perceived risk that emerged through the exploratory and survey research. We then move to the strategies that older adults use to address these risks.

3.3 Perceived Risks

We developed 41 survey items about risk perception based on the existing literature and our interviews: 20 items targeted people's thoughts, feelings and expectations when using ICT, 15 items addressed issues to do with risks associated with online transactions and the cost of using ICT, and 14 items broadly addressed potential perceived personal risks.

We conducted factor analysis, discriminant validity assessment, and scale reliability analyses to test whether the survey items tapped into underlying constructs. Our factor analysis revealed six risk perception categories: *Operational and Functional, Privacy and Transaction, Personal and Social, Purchase Transaction, Overspending, and Physical Harm.*

Understanding the different types of risk is useful for researchers because it means that they can work on a more tailored approach to reducing risk and devising more effective strategies to overcome each type of risk.

In addition, it was clear that U3A respondents had relatively low levels of perceived risk associated with engaging with ICT. Respondents' levels of perceived risk can be partially attributed to U3A's successful digital inclusion program that includes courses, workshops and peer-to-peer mentoring.

Perceived Risk and Digital Literacy

For all forms of perceived risk, respondents with high digital literacy had lower risk scores than those with low digital literacy.
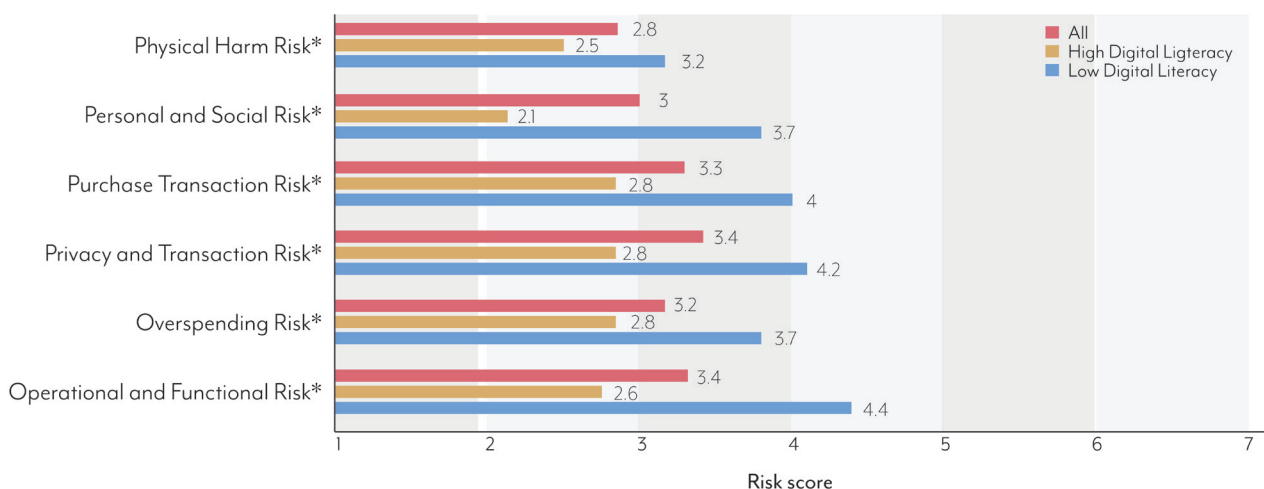

Figure 7. Perceived risk scores and digital literacy

3.4 Strategies for Older Adults

After identifying six key perceived risks that older adults experience (phase 2), we sought to develop strategies to reduce and navigate the challenges of ICT use in phase 3. To define these strategies and develop relevant resources, we collaborated with older adults who were members of U3A or residents of the City of Whittlesea, Victoria, Australia (see section 4 for more details).

Approaching ICT Strategies
As illustrated in Figure 8, we developed the strategies across the identified risks, categorising them into useful segments to help guide the co-design of strategies with users. The resulting strategies were defined by the central risk being addressed, as well as whether it was individual or relational in approach:

- Individual strategies are those that can be implemented by the person experiencing the risk by themselves,
- Relational strategies are those that require the help of other people, such as friends, peers, neighbours, or family members.

Alongside categorising each type of strategy by risk and approach, we also documented how beginners and experienced ICT users employ different techniques, further dividing our strategies.

As comprehensively detailed in our ICT Strategies Booklet (see Chapter 4.2 Digital Resource Tools), we captured examples of the typical situations older adults have had to navigate, as well as strategies to manage their perceived ICT risks. This considered contexts such as:

- everyday living (search engine researching, emailing, banking, paying bills, reading news, communicating via Zoom or other video calls)
- shopping and entertainment (various forms of online shopping, online books/magazines/movies/TV)
- social networking (chatting on messenger apps, uploading content for friends and family)
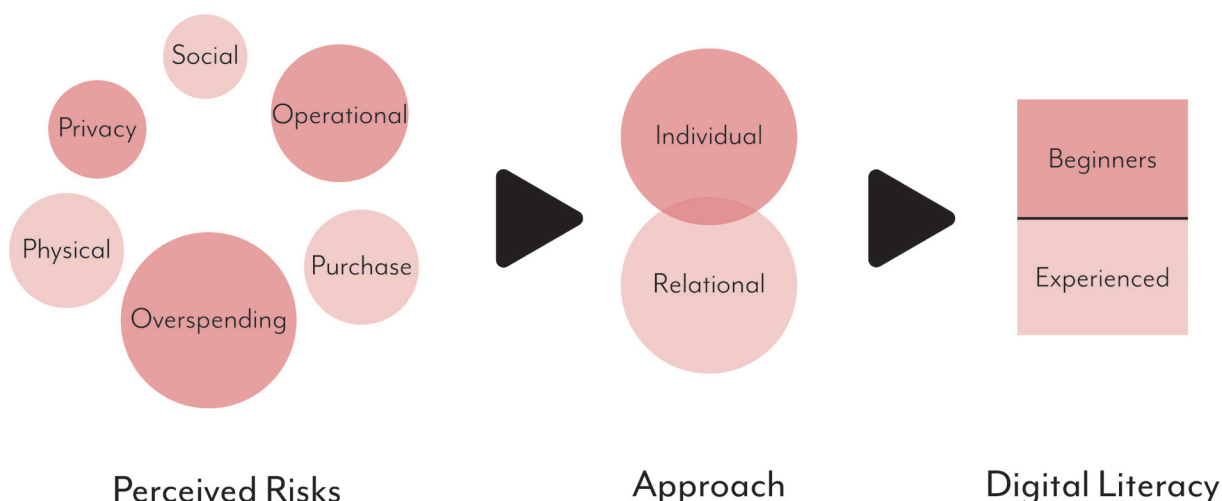- gaming (playing standalone or connected networked games online).

Perceived Risks   Approach   Digital Literacy

Figure 8. Visual of strategies categorising

Strategies for Digital Literacy Levels

To describe how the resulting strategies are personalised and specific to individual needs, we drew on the insights from the co-design workshops that described an important contrast between the low/medium/high digital literacy older adults.

Aspirations: We documented how our participants saw that those with higher digital literacy levels had skills which provided a platform for expanding their activities and horizons, leading to technology becoming very multipurpose to fit their aspirations of gaining increased accessibility, for gathering information and planning, or enhancing hobbies.

By comparison, those with middle to low levels of digital literacy often saw individuals prioritise using technology to connect and socialise – calling family or friends, passively viewing social media updates, or getting support in emergency situations
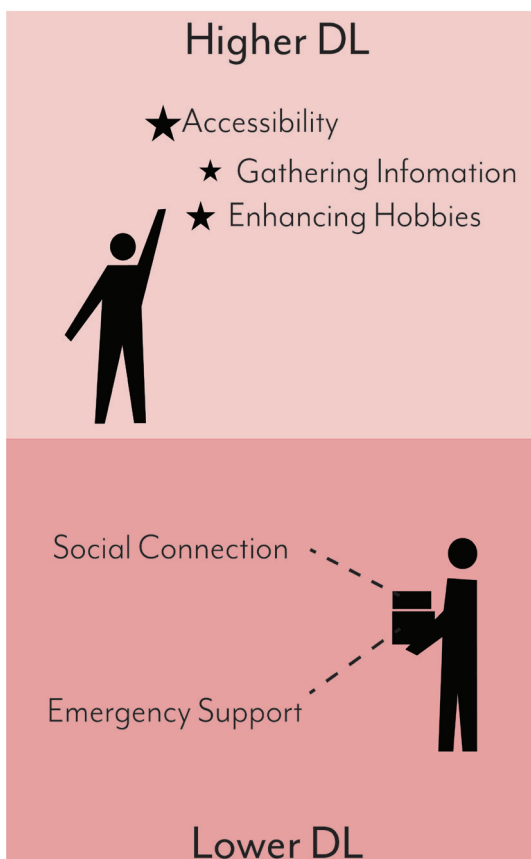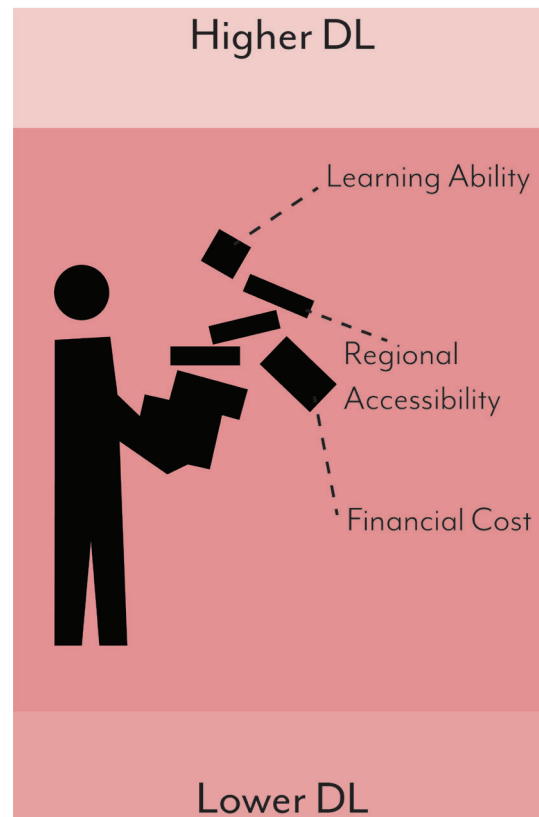
Figure 10. Barriers

Barriers: However, across this spectrum, both ends documented inherent barriers due to their own unique personal and environmental limitations. This manifested in individual characteristics such as patience to learn, or increasing memory-loss that could affect anyone on this spectrum. This could be bundled with external or environmental limitations such as financial barriers due to, for example, the high cost of devices; reduced access to online services; and issues with device availability due to living regionally, regardless of whether participants had high or low skill levels.

Figure 9. Aspirations

Figure 11. Capabilities

Health Applications. Finally, when discussing the health priorities of a higher vs lower digital literacy individual, participants focused on how a higher literacy person would integrate their devices and application into their wellbeing by tracking and measuring their efforts or accessing health advice.

By comparison, those with less skills prioritised keeping an active mind and being socially active, which reflected their concerns regarding memory loss leading to an inability to learn which, in turn, could create barriers to increased ICT use.

Our multimethod research, using novel approaches to understand how older adults navigate and mitigate ICT use, has allowed us to to capture a broad understanding of the risks that older adults face every day and the ways in which they reduce and/or challenge these issues.

Capabilities: Considering the differing aspirations of low- and high-level groups, participants documented that those with more skills would see a prevalence of technology in their lives, with devices such as smartphones used to communicate and socialise such as smartphones, iPads or Smart TVs to browse and watch content, and FitBits and other wearables to track health. However, this increased level of tech use – often and practically everywhere – spurred participants to pose questions about whether this could lead to addiction or overuse.

Meanwhile, those with lower digital literacy levels might only use their devices in an emergency, with a higher likelihood of utilising basic functions with a mobile or landline phone. This was compounded by this cohort accessing mainly second-hand devices or computer equipment, likely leading to them encountering reduced functionality.
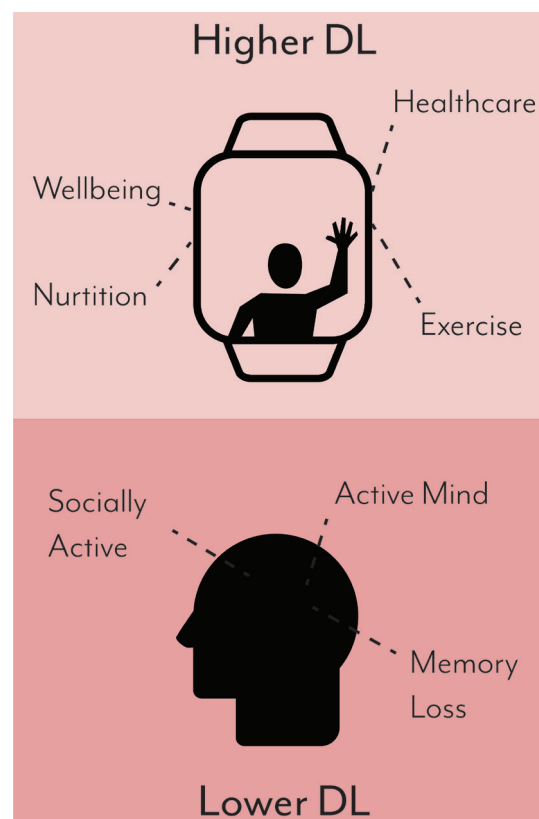

Figure 12. Health Applications

4. Development of Education Resources

4.1 Co-Design Workshops

Drawing on the insights from the first and second phases of research (Explore and Quantify and Understand), the six co-design workshops provided a platform to collaborate and work with older adults and their communities to understand the strategies they use to overcome risk. Reflecting the changing conditions in which this phase was undertaken, a combination of online and in-person workshops were conducted, with a variety of methods used to engage and collaborate with participants.

The online co-design workshops involved members of the U3A community – the initial workshops with tech savvy U3A mentors and the later workshops with a broad spectrum of U3A members. These led into three in-person workshops conducted with participants across the City of Whittlesea. The first workshops was in Wollert, the second in Thomastown, both with older adults. The third workshop included representatives from government organisations and groups that support older adults in the area.

The workshops themselves involved several sessions over one to two days. These workshops were based around two activities: 'persona enrichment' and 'scenario mapping' activities. Persona enrichment involved using an initial mapping of key influential segmentation variables to get older adults to project their own experiences into ideal cases. These key variables (high and low digital literacy, male and female, single or couple) were drawn from our quantitative and qualitative findings from phases 1 and 2. For persona enrichment, groups of four to five participants used this data to kick start a discussion. Then, drawing on personal experiences and understandings, they 'gave life' to the data, outlining important aspects to these fictional individuals, such as their aspirations around technology use and their health, as well as where they might get support or source information.

Flowing on from this activity, the scenario mapping took these enriched personas and placed them in a series of challenging situations, which we called 'risk scenarios', where participants discussed both problems that could arise and potential solutions for this persona.

Persona Enrichment

- Compose Individual
- ICT Aspirations & Use
- Health Priorities

Scenario Mapping
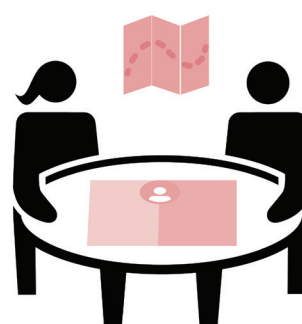
- Situation Identification
- Problems to face
- Solutions to use

Figure 13. Visual of workshop design

Figure 14. Miro board from online workshops

Online Workshops

The initial workshops with U3A members were conducted online in January and February, with participants and facilitators working via Zoom video communications. The first two workshop enlisted 13 U3A mentors, specifically those conducting technology classes, in 3-hour sessions – an introduction to an online whiteboarding tool, and the persona scenario activities themselves
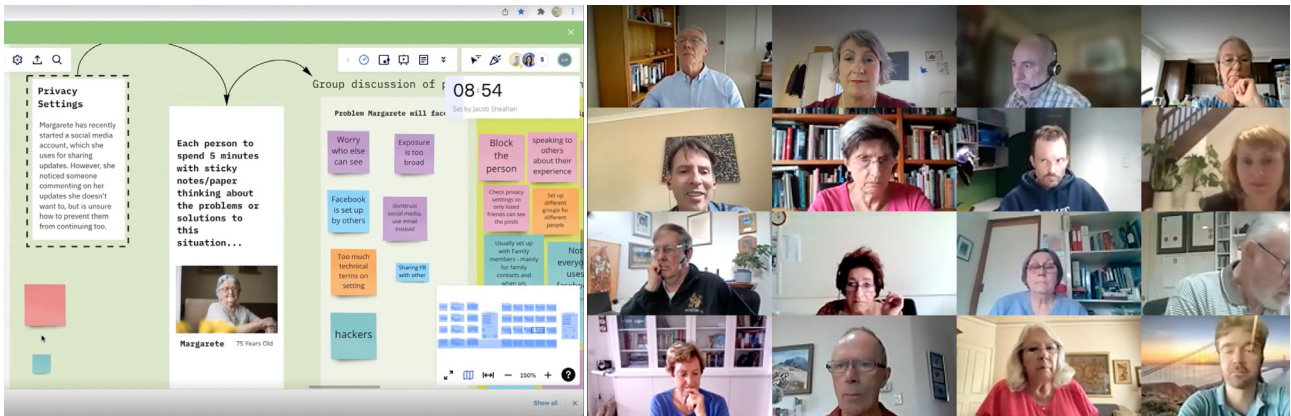
This training was followed by the persona enrichment activity on the same day, with the scenario mapping on the following day. Both activities were followed by reflections on the sessions, as well as a lengthy discussion with participants about their learnings and experiences, offering valuable insights:

- Throughout the workshops, participants focused on how the process enabled a variety of various voices to be engaged, compared to alternative formats.

- We also saw participants reflect on a spectrum of digital literacy in later life, and the importance of understanding the context in which an older adult wants to learn.

- The mapping of scenarios saw further discussion around how to strategically realise the skill level and needs of older adults, with an emphasis on practical experiences.

The following workshop in February included 14 general members of the U3A Victoria community. Taking four breakout groups through the two activities, we began to see similarities and differences in the outcomes and insights between this and the mentor group:

- Like the mentor group, an understanding of the skill level and background of a technology learner was key – explored here through notions of pace and learning style, as well as a focus on how practice brings familiarity.

- While a focus on the U3A platform remained, there were also notions of connecting with other services and raising awareness for resources such as the Be Connected program and other technology classes.

- Finally, participants reflected upon the emerging delineations between high, medium, and low digital literacy strategies and experiences in the scenarios, documenting how certain levels brought with them new challenges.

In-person Seniors Workshops

After the two online workshops, the following two workshops included culturally and linguistically diverse (CALD) older adults from the City of Whittlesea. These workshops were conducted in-person at two council locations. Demonstrating the flexibility of the method, the personas and scenarios were translated into physical artefacts, focused on helping create these essentialised types (personas). The physical artefacts invited engagement and co-creation, as participants responded to the situations placed before them. Similar to the previous workshops, the session a one-day, 5 hours, event.

The first in-person workshop was held in Wollert. The workshop included 13 participants from CALD communities, organised into three main groups. The workshop was facilitated by several RMIT researchers, with a vignette of this workshop available here: *Wollert Community Hall Session*. This workshop lead to the following observations:

- Foremost, the participants further enhanced our understanding of the resources and strategies available at different tiers of digital literacy, and how the risks of focus changed.

- Alongside the strategies discussed, we documented how groups of a particular ethnic background (e.g., Egyptian) struggled to connect with their allocated persona. This provided an opportunity to discuss the language, social and cultural barriers faced by older migrants, and how we could increase their digital inclusion.

- We finalised with a discussion around what participants sought from their local council regarding guidance and initiatives to support their ICT skills. Participants said they wanted more clarity about available resources for ICT engagement and clearer pathways to gain ICT skills. They also suggested that ICT supporter roles could help foster digital abilities.

Figure 15. Wollert workshop with local seniors

The Wollert workshop was closely followed by our first at the Thomastown Community Centre. This involved a much larger group (26 locals) and was facilitated by RMIT researchers. As a further iteration on the last workshop, due to the increased proportion of CALD participants, an additional two personas with migrant histories were added.

Another iterative aspect we incorporated into this workshop was a floating lead facilitator. This role evolved organically from the Wollert workshops, but was deemed a necessity for Thomastown, given the increased scale. This workshop has also been documented through a vignette available here: *Thomastown Community Activity Centre Session*.We were able to capture the following sentiments from this larger group:

- Participants expressed concerns about how personal literacy was understood, and how individuals might be better able to recognise and articulate their own skill level, and how the community could to provide more support.

- This was exemplified in how higher literacy personas could often google questions or issues, but lower literacy personas were concerned about how to search, whether their terminology was correct, or how to yield better results.

- Considering this group was not U3A-centric, sources of education and learning were mixed. Many asked what the local council and library provided in terms of directing people to organisations and helpful platforms.

- We noted several high literacy, tech-savvy 'advocates' amongst participants, and saw how engaging with low literacy or less confident participants made many realise how critical the communication and delivery of support was to less IT-savvy individuals.

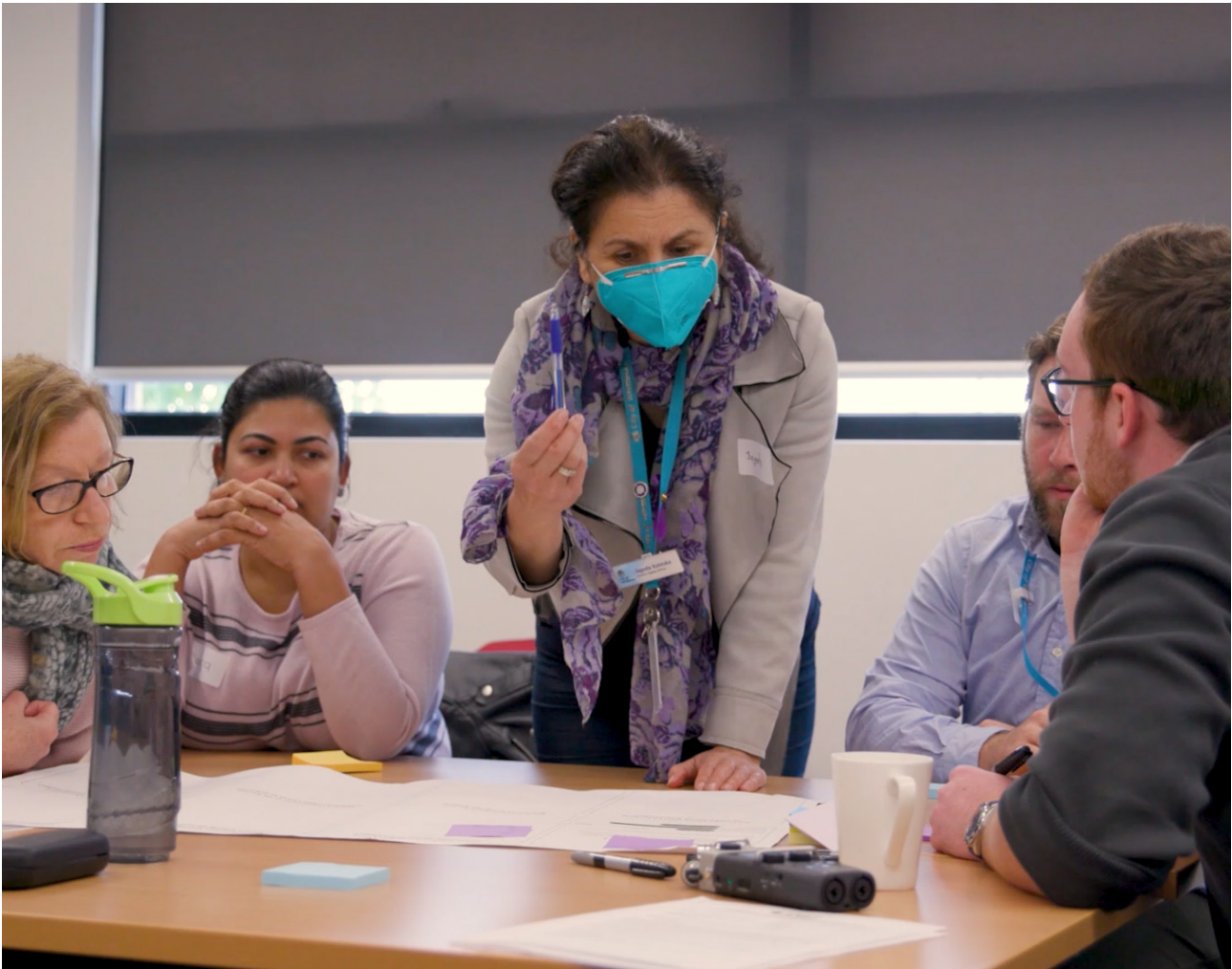*Figure 16. Persona Enrichment at Thomastown Seniors Workshop*

Figure 17. Workshop with council representatives

In-Person Organisations Workshop

We used an abridged combination of insights from the previous four workshops to run the final workshop, comprised of groups and organisations that support older adults. In this workshop, we also had the opportunity to co-create and initiate strategies with participants. This workshop included a research analysis and outcomes sessions followed by an organisational strategies and initiatives activity. This workshop has also been documented through a vignette available here: *Workshop with Councils – Thomastown Session*

• Participants engaged strongly with notions of potential when discussing personas, with some identifying certain lower digital literary personas as 'prime' for more technology use

• These participants drew on their unique knowledge as council workers to frame the opportunities available to older adults, suggesting such a working knowledge could be critical to getting support.

• Finally, after presenting the online tools, there was an emphasis placed on open access and adaptive options.

4.2 Strategies to Increase Your Digital Confidence to Connect Safely booklet

Developed specifically for older adults, this digital booklet is intended to promote digital inclusion. It aims to support older Australians with strategies to increase their digital confidence to connect, and assist organisations working with older adults and policymakers to help reduce the digital divide. We want to help older adults to increase their digital confidence by addressing perceived risks experienced when engaging with ICT, based on lived experienced. We also want to encourage policymakers and organisations working with older adults to consult this research and the identified co-designed strategies to better understand how they can support older adults.

Through our research, we identified six key perceived risks that older adults experience. In this booklet, we go into detail about the perceived risk categories and suggest strategies to combat them. For each risk, we provide:

- vignettes of older adults explaining their experience
- a set of individual and relational strategies to help them better engage with ICT.

Individual strategies are those that can be implemented by the person experiencing the risk by themselves. Relational strategies are those that require the help of other people, such as friends, peers, neighbours or family members. Each type of strategy (individual/relational) is further divided into two groups: beginners and experienced ICT users.

This booklet can be found via our website or here: *Strategies to Increase Your Digital Confidence to Connect Safely booklet*
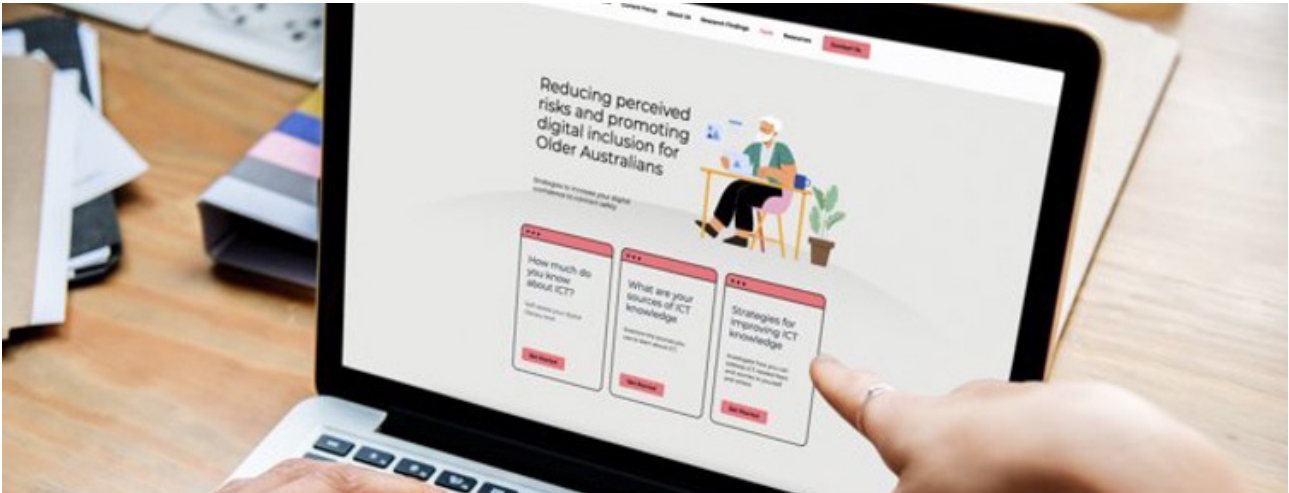

Figure 18. ICT booklet

Figure 21. Online tools

4.3 Digital Resource Tools

To supplement the booklet, we built three interactive tools that can be accessed from the *Shaping Connections* website. The tools target older adults and relate to self-assessing ICT skills, investigating the sources of ICT knowledge, and addressing strategies for improving knowledge.

**How much do you know about ICT?**

One of several tools developed to explore the risks and strategies relevant to older adults, this first quiz explores individual confidence as part of a self-rating of their skillset. This self-assessment tool can either be used online via an interactive tool or as a printable pdf version. The self-assessment involves completing several yes/no questions to characterise technical, information and search, mobile device use, social and sharing, and content and creative skills. A radar or web chart compiles the results, indicating areas of proficiency and for improvement.

Developed with class teachers, students, and organisations supporting older adults, this quiz was seen to offer a complete comparison tool that could aid in quick group assessments. Within the classroom setting, the tool offers tutors a simple and intuitive method of benchmarking and assessing a cohort's skillset, enabling the tutors to adapt their materials. The benefit of making the tool both an interactive online tool and printable is that students can access it regardless of their digital literacy or access to the internet.

Most organisations have indicated that the format is effective, but they would also like to customise and adapt it to particular courses or sub-topics, making the open access nature of the tool essential to supporting long-term adoption.
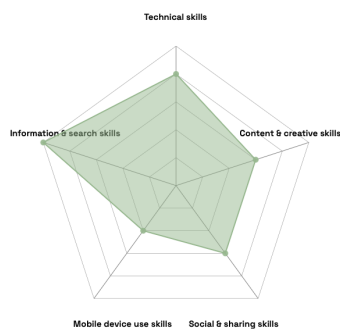
Figure 19. Interactive tool

What are your sources of ICT knowledge?

The subsequent tool focuses on the insights we gained which indicated that the advice older adults receive from not their first but second source of support more often aligns with their level of ICT skill.

This online tool was developed to aid users (older adults as well as their supporters) to reflect on the hierarchy of support sources available to older adults, and whether they are receiving the optimal level of support. Providing several categories of support with using ICT devices, the tool can be used to see how the older adults participating in our research evaluated each device.

Each potential source is paired with advice regarding the benefits of each source. For example, grandchildren are more useful when giving advice related to entertainment or communication. The limitations of each source is also provided. Using the same example, grandchildren may be less useful with regard to more practical use of ICT devices.
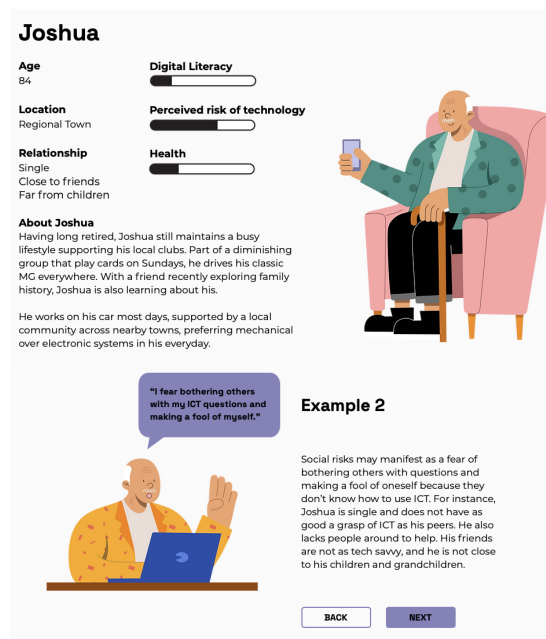

Figure 20. Sources of ICT knowledge list

Figure 21. Example of Joshua persona

Strategies for improving ICT knowledge

Building on the series of workshops in which older adults in Victoria developed personas to represent common concerns and features found in the community, this online tool was developed to support older adults to explore how they relate to the six different categories of risk based around a persona they identify with. In detailing the risks faced by each persona, we provide a set of strategies the persona may use to reduce their perception of risk and improve ICT knowledge on their terms.

After reviewing these instructions, several personas – Dawn, Joshua, Margarete, Timothy, and others – are presented, with details not only on their age, level of digital literacy, perceived risks and health, but also a short bio that users can review. In relating most to a certain persona, say Joshua (84, low digital literacy and high perceived risk), the tool describes this persona's situation and the potential risks this persona faces.

In our example, Joshua faces various operational, social, privacy, purchase, overspending, and physical risks. When users choose one, further information is provided regarding the perceived risk, as well as several examples of how this might form for Joshua.

4.4 Webinar & Workshops

Seniors' Organisations Webinar (28 April 2022): We created this platform to disseminate the research project's findings with several organisations, councils, and individuals involved with older adults and technology. The webinar provided a powerful way of getting relevant people and organisations across this growing network to engage and connect with our work. This seminar involved:

- research institutions: NARI, University of Melbourne, University of Western Australia

- government services: Emergency Management Victoria, Victoria State Emergency Service, Department of Families, Fairness and Housing

- CALD services: Ethnic Communities' Council of Victoria, Multicultural Consulting Services

- councils: Banyule, Bayside, Boroondara, Casey, Hepburn, La Trobe, Manning, Maroondah, Melbourne, Melton, Moorabool, Moreland, Wellington, Wyndham

- aged care services: Estia Health, Lifestyle Communities, Halley Assist, Proactive Ageing

- community services: Football Victoria, Brotherhood of Saint Laurence, Dianella Health and Plenty Valley Community Health.
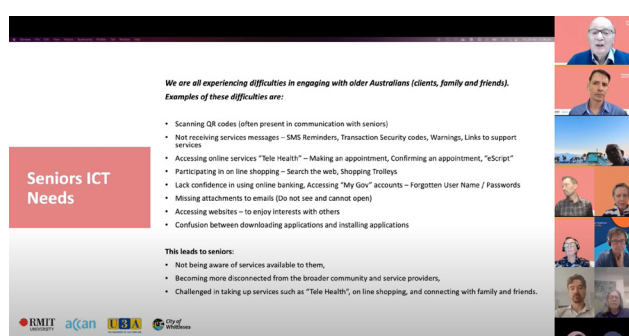

Figure 22. Slide from online webinar

Dissemination Workshops

We involved U3A members, key members of senior networks for digital inclusion, telecommunications, and research organisations as well as local government authorities in our dissemination events. These events introduced the project, discussed the outcomes and outputs, and provided opportunities not only for Q&A, but also for feedback on the resulting materials. We also distributed an evaluation survey at the end to ensure that the impact of the project can be assessed.

U3A Kingston Social Studies (2 May): Sharing our work at a weekly social studies seminar, the research team introduced the research, insights, and outputs. Through a combination of Q&A and feedback, we were able to gain useful understanding about how our tools could be beneficial or further improved in supporting the lives of older adults.

DPV Health (2 June): Presenting our research and resources to leadership at DPV Health as part of a partnership development, the team members discussed the development of their community strategy and digital literacy plans to support a program for older consumers.

MARC 2022 Symposium (11 July): The Melbourne Ageing Research Collaboration (MARC) is a unique collaboration of health, research, aged care and advocacy organisations working together to improve the lives of older people. The research team was invited by MARC to present its workshop as part of a series of talks around the theme 'A date with data: Using data to influence ageing policies and practice'. Members of the research team presented our workshop findings to more than 40 researchers and industry experts in ageing, adding to a discussion around the use and role of data in health ageing and aged care.

Implementation Workshops

We held workshops with local mentors who ran computer courses in local U3A groups to help them engage with our resources and devise ways in which they could implement them. We also held a workshop with NBN staff focused on exploring how they engage older adults, and how staff members could bring these resources into their daily practices. Our research team introduced the research, as well as our guidelines and strategies to support management of perceived risk.

U3A Network Victoria Computer Mentors (5 May): Following our dissemination workshop with U3A members, we conducted an implementation workshop with Victorian ICT tutors and mentors, forming an extensive discussion around how the resources could help set up classes and aid teachers in supporting their students.

NBN Strategy and Marketing (19 May): Following this we conducted an Insights and Implementation workshop with the Strategy and Marketing team from the NBN corporation. This involved not only sharing the process and outcomes of our research, but also important insights regarding the resulting enriched personas. NBN is working on a new campaign targeting older adults, and the workshop helped them understand the lived experiences and challenges of older adults and ICT. By explaining and workshopping the diverse range of issues older adults face, the research team aimed to shape current NBN strategies to create more digitally inclusive technology and environments for older adults. The workshop was attended by 23 marketing, media, and strategy staff from the NBN corporation. Overall feedback from the workshop was that our resources have helped the team to better understand the diversity of the older adult market through the Shaping Connection personas, and they are better able to appreciate the different sources of knowledge and better target their messaging to older adults.

5. Final Insights and Recommendations

5.1 Summary

This research project has used a multidisciplinary and multimethod approach to engage with end-users and stakeholder and learn more about how we can support older adults to participate in the growing digital economy through addressing their ICT risks and strategies. In compiling our insights, and creating digital tools and resources, we have developed recommendations that can address not only the needs of older adults, but the organisations and policymakers involved in enabling their digital futures. Our recommendations focus on five critical points that organically emerged from our findings:

- First, we need to refocus the conversation from the dyadic thinking of the digital divide (included vs excluded) to a spectrum thinking, which recognises the diversity of ICT needs, goals and capabilities among older adults. Recognising and understanding this diversity is key to achieving better levels of digital inclusion among this diverse population.

- Second, we need to expand the current understanding of security risks, which focuses solely on tangible issues such as scams and identity theft, to incorporate more knowledge on the experiential side of risks. As we learned from this project, perceived risks, although intangible, shape how older adults respond and engage with technology. Expanding the notion of risk to the lived experiences of older adults allows them, organisations and policymakers to better understand the barriers and levers that might help foster digital inclusion.

- Third, we need to acknowledge the intersectionality of the digital exclusion, moving from older adults as a category that needs to be understood on its own to considering its intersection with other important factors such as gender, social class, and ethnic background. Importantly, at a more collective level, we need to highlight the role of CALD groups in shaping digital inclusion. The dynamics of learning and sharing are specific to these groups and require tailored strategies and programs.

- Fourth, we clearly need to adopt more participatory methods in researching older adults' relationships with technology. Older adults perceive a growing societal awareness that the voice of the older adults must be listened to. However, a recurrent theme across the various phases of this project is how little they perceive their voice to be actually heard. The extent to which older adults' input manifest into institutional actions and programs that really attend to older adults' needs varies from one institutional context to another. While there are many programs that include a tokenistic 'seniors advisory board', very little is done to effectively respond to older adults' needs and to adopt solutions that are proposed by or co-designed with them.

- Fifth, we need to shift the public debate, and consequently research action, from an individual skills growth to a more socially-embedded practice focus. There are, in fact, multiple programs happening across Australia that seek to empower older adults by providing them with educational resources that allow them to individually gain new skills. While some of these programs are excellent, the underlying problem is that these skills are often offered in a way that is disconnected from the social practices in which they are meant to occur. So, for example, 'learning how create your own cards' might be a useful skill, but it only gets picked up when it provides sustained value for older adults. This happens when this skill is contextualised into a set of practices that are meaningful and attend to specific needs and interests (e.g., sending personalised cards to friends during a lockdown has become an important way of showing care, friendship, and love among certain groups of older adults).

We have developed the following recommendations around the three relevant audiences: older adults, organisations and policymakers. First, we provide recommendations on how older adults can navigate the perceived risks of digital technologies, through realising the characteristics of how they learn, seek support and form strategies relevant to them. Second, we reflect on the role of organisations which support older adults to become open to ICTs and improving their skills, how this education needs to become student-centred and see learning as a social and ongoing need. Third, in considering the previous recommendations, we see how policymakers can facilitate catalysts for change, investing in the skills and learning of these senior consumers to realise not only their value to the digital economy, but make their involvement a responsible and informed one.

5.2 Older Adults

Building on our co-exploration with older adults into the perceived risks that limit their ICT use, and through co-design workshops which formed responding strategies, our recommendations for older adults focus upon addressing the five themes above to make digital literacy a meaningful and useful ability for older adults. Foremost, this means older adults need to realise their intentions and wants from ICT and be able to communicate what they wish to learn and take steps towards realising their goals.

Our tools speak to how we acknowledge learning ICT is not a straightforward or singular endeavour for older adults, but intertwined with their communities, social groups, and lifestyles. These form opportunities to self-assess digital literacy

 examine their sources of ICT learning and support, alongside personalised strategies which address ICT-related fears and worries. We see the opportunity for older adults to engage with the digital economy as a critical one, reflecting their aspirations to continue to be part of their communities. Through empowering their end-users with accessible knowledge, learning opportunities, and the ability to realise their own digital needs and wants, we recommend enabling self-advocacy and support from organisations and policymakers.

In considering the diversity of older adults' capabilities and goals, we find it is important for older adults to become aware of the diverse set of needs, goals, and capabilities they have. During this project, it became apparent that while this diversity is obvious for some, it was not the case for many. Trapped in their own bubble with people who were often like them, those with low digital literacies often accepted their lack of knowledge and skills as a consequence of age, reflecting the deeply ingrained stigma that older adults have a difficult time with technology. This created a mindset that made them less open to learning and using new ICT skills. In contrast, those who were able to see the diversity of possibilities and skills for older adults and ICT reflected that lower digital skills were provisional and actively sought to change their behaviour.

The personas we have developed and enriched together with participants in this project seek to help older adults to understand their own diversity. We recommend that older adults use them to gain a better understanding of where they fit in their own journey toward digital inclusion.

Regarding the recommendation to better consider the experiential and intangible aspects of risk in ICT use risk, we recommend older adults consider the set of identified perceived risks as a way of understanding possible barriers to their own adoption of technology. This helps older adults move away from the idea of, 'I am good/not good with technology' to focusing on specific challenges they might have with technology. Some might be fine with their digital skills but might have issues using ICT in front of others or going online to shop. By considering whether each type of perceived risk affects their relationship with ICT, older adults are better equipped to diagnose what they need help with. To address this goal, we have produced a booklet and an interactive tool that helps older adults understand potential strategies to overcome the specific barriers for each risk. The different set of proposed strategies in the booklet also offer opportunities for advice that is more tailored to the needs of each group. It is important to note that these strategies emerge from the older adults' collective wisdom; that is, they have worked for some older adults, and so they are likely to work for others facing similar challenges.

In considering the role of cultural background in shaping perceived risk, we recommend CALD older adults to actively seek help from ethnic-based organisations and groups because the ICT skills they require are often embedded in larger cultural strategies that are specific to each group. We see that the interest in learning ICT skills increases when the learning happens in culturally meaningful places and from culturally informed ambassadors.

In seeking to expand the use of participatory methods to include older adults' voices, we urge older adults to volunteer to participate more in peer-to-peer networks, advocacy groups, and co-design programs that help organisations better understand the needs of older adults. By doing this they move away from being passive learners towards a more engaged position in relation to their own learning. During this project, participants who sought to overcome their challenges by actively engaging in our workshops not only contributed to shaping better strategies for other older adults, but also engaged in a reflective process that helped them to consider their own challenges and journeys towards digital inclusion. The sense of autonomy, independence and empowerment seems to grow when older adults embrace these participatory modes of research.

In advocating for more socially embedded practice-based educational interventions, we strongly suggest that older adults engage in practise-based learning programs that go beyond teaching new skills. A recurrent theme in the research was the loss of gained skills when they were not used immediately. Older adults should seek programs that 'teach by doing' and that ask older adults to practice the new skills in a series of relevant contexts. We also advise older adults to seek programs that do this training in groups instead of individually. The challenges that older adults face are collective, and for older adults, realising that a challenge is a shared issue can help address the anxiety felt when confronting these challenges. Another critical issue for older adults is to learn how to engage with a wide range of support people who might be available to help them. The online resource we developed called "What are your sources of ICT knowledge?", seeks to help older adults consider their daily sources of ICT knowledge and gain a sense of appreciation for what each source can provide them. So, we recommend older adults take some time to assess the role of these different sources in their own lives and reflect on whether they could expand their existing sources to increase the support they receive.

5.3 Organisations

In supporting older adults, we recommend that organisations focus on building digital literacy: lifelong learning should be the cornerstone of their practices. We have documented the unique way such organisations can not only advocate for older adults society-wide, but also provide platforms which enable opportunities: providing the practical and social dimensions necessary for making ICTs beneficial for older adults in their everyday lives. Therefore, we recommend student-centred approaches to ICT learning and improving digital literacy across organisations that support older Australians today.

In considering the diversity of older adults' capabilities and goals, we recommend that organisations working on digital inclusion for older adults to segment their content and better tailor their programs to the diverse needs of older adults. Our self-assessment tool was developed to help older adults assess their digital literacy levels in diverse domains. This can be a starting point for organisations to allocate older adults to specific learning groups or making more informed decisions on whether an educational program or intervention might be a good match for someone. We also recommend that organisations work in collaboration with educational institutions such as universities or TAFEs who are normally geared towards creating educational products that consider the scaffolding of knowledge and the segmentation of learners.

With regard to the recommendation to better consider the experiential and intangible aspects of risk in ICT use, we urge organisations to move beyond simply transmitting ICT knowledge and skills to also informing older adults about how experiential aspects of ICT might influence their learning. Similarly, it is important that these organisations train their mentors in these intangible aspects of ICT adoption. During this project, we found that the mentors who were deeply appreciated by older adults were those who went beyond transmitting knowledge to understanding the affective challenges of learning ICT. In this sense, the strategies developed in this study and presented in the booklet and online tool are useful vehicles to achieving this goal. By addressing the challenges that emerge from the different types of perceived risks, the strategies provide rich resources for ICT mentors and students to address experiential challenges of ICT learning.

In considering the role of cultural background in shaping perceived risk, we highlight the importance of CALD associations and groups in fostering digital inclusion. We found that many organisations could recommend CALD older adults to existing programs for digital inclusion; however, these programs were not tailored to the needs of these groups. There is an urgent need for programs crafted specifically to the needs of these older adults. This goes beyond translating instructions into a specific language, but also considering how learning strategies and meaningful content intersect with established cultural practices around technology.

In seeking to expand the use of participatory methods to include older adults' voices, we strongly recommend that organisations include older adults in the planning of their own classes and digital resources. During our research, it became clear that older adults engage with ICT to attend to specific needs. Therefore, older adults in each context are better equipped to determine what these needs are. When older adults work with mentors to co-design educational programs, these programs become immediately relevant for older adults. Thus, there is a drive for organisations to design ICT programs and curriculums not just for older adults, but also with older adults. We also need programs that are flexible and agile in how they respond to older adults' needs. For example, one of the most successful programs for digital inclusion at U3A has a flexible course guide, allowing time for older adults to ask questions about anything they might currently be struggling with (e.g., how to upload a vaccine passport to the smartphone), even when this is unrelated to the class topic. So, the mentor provides the support on a needs-basis, not following tightly a pre-formatted structure.

In advocating for more socially embedded practice-based educational interventions, we recommend that organisations should move from centralised to peer learning. Peer learning involves older adults learning with and from each other. This automatically embeds the knowledge that older adults seek to gain into a web of practices that are relevant to them. In peer-to-peer learning, organisations play an important role in providing the structure for the learning, facilitated through teaching and learning activities such as student-led workshops, study groups, peer-to-peer learning partnerships, and group work. In addition to peer-to-peer learning, we advise that organisations leverage the role of social connectors. Social connectors are critical elements in the community who are central to creating and maintaining environments that foster connection between different community or group members. They sit at the centre of social and collaborative networks. Their social practices tend to influence and improve the social behaviour of others in their networks. As such, social connectors are crucial actors in supporting older adults in connecting the use of digital tools to existing social interactions and behaviours.

5.4 Policymakers

In seeking a level of autonomy from older adults, and the support of relevant organisations, we recommend policymakers facilitate the catalysts necessary for making the digital economy accessible for older adults. We recommend that interventions seek to make older Australians more responsible and informed in their online use, and that policy is orientated toward connecting older adults with the appropriate social and cultural groups to help them excel – forming platforms which build capacity and skills for engaging in the digital economy. Our recommendations to policymakers address the following points:

- The need to extend beyond the dominant narrative of the digital divide.

- The need to move beyond the awareness of security threats and scams to incorporate older adults' lived experiences of perceived risks.

- The need to embrace approaches that enable and empower the organisations and groups that work directly with CALD older adults.

- The need to move away from tokenistic approaches to participation to better incorporate the voices of older adults in all phases of research and policymaking.

- The need to consider the role of social connectors in enabling the practices that allow ICT adoption, learning and use to happen.

In considering the diversity of older adults' capabilities and goals, we urge policymakers to extend beyond the narrative of the digital divide. While this narrative can be a useful way of identifying those most in need (e.g., the most socially- and digitally-excluded in society), it tends to reproduce the notion that there is indeed a literacy chasm that needs to be crossed and that once crossed, people move from being excluded to included. In reality, what our project shows is that, while as a group they may be among the most digitally excluded, older adults can sit anywhere on the digital literacy spectrum. There are older adults who have worked most of their lives in IT-related areas

and carry that interest into their retirement. Then there are older adults who are technophobes. But most of our participants varied in how they engaged with technology. For example, some older adults had low digital literacy in relation to using professional tools like Microsoft Office, but they were avid users of social media tools. Others were not into social media at all but were keen to use games and learning platforms. It is time for policymakers to understand this diversity and that crossing the digital divide is more a journey than a goal. Taking the full spectrum into consideration would allow governments and organisations to stop trying to cater for the elusive 'excluded' citizen, which can often increase the stigmatised position of older adults as necessarily belonging to the end of the spectrum, to work instead with a segmented approach that targets different groups and their specific needs.

To better consider the experiential and intangible aspects of risk in ICT use, we recommend policymakers promote and fund research and intervention programs that go beyond the awareness of security threats and scams to incorporate their lived experiences of perceived risks. This expansion in scope will help foster interventions that that are not only knowledge-based and context-relevant but also desirable and highly sustainable, as it considers the strategies to overcome intrinsic barriers to ICT learning and digital inclusion associated with the dimensions of perceived risk.

In considering the role of cultural background in shaping perceived risk, we recommend moving away from one-size-fits-all policies and instead embrace approaches that enable and empower the organisations and groups that work directly with CALD older adults. In this project, we tried to demonstrate the need for a tailored approach for CALD groups by including two personas that belong to CALD groups, which emerged from the persona enrichment process. While this approach is a step toward evidencing that CALD older adults have specific needs compared to non-CALD older

Australians, requiring specific sets of strategies for digital inclusion, it also provides limited insights, as it runs the risk of oversimplifying the needs and behaviours of CALD older adults by depicting only two personas. We advise taking these two CALD personas as evidence that a tailored approach is needed to adequately include older adults from these cultural groups and contexts. However, the research has demonstrated a strong need to consider these ethnic groups separately. Effectively this means that policymakers should encourage organisations to develop their own personas to reflect the needs, goals and capabilities of their particular CALD community more accurately.

We also strongly suggest that policymakers embrace co-designing with older adults as a normal practice. We find that older adults are usually keen to contribute to new policies and have a lot to say about pain points and opportunities in their journey to becoming more digitally included. We recommend moving away from a tokenistic approach, in which the voices of older adults are included to tick an inclusion box, or an assessment approach, in which older adults are invited to comment on new policy proposals, and strongly advocate instead for co-design as a way of including older Australians in every phase of policymaking, from planning to implementation. This change in approach would help include older adults not just as receivers of services, but as empowered enablers of learning and knowledge.

Finally, in advocating for more socially embedded practice-based educational interventions for digital inclusion, we recommend that policymakers should focus on the role of social connectors in enabling the practices that allow adoption, learning and use to happen. Policies that help identify, train, and support the work of social connectors provide an effective way of empowering community leaders to become catalysts of digital inclusion. For similar reasons, policymakers should seek to support and empower the peer-to-peer networks of older adults, as they are naturally suited to leverage the practices that promote, support, and sustain peer learning.

We hope that our recommendations across these five themes and three audiences represent a useful contribution to the goal of digital inclusion.

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Mike is a Professor in Marketing in the School of Economics, Finance and Marketing at RMIT University. His research encompasses social marketing areas of food literacy, consumer food choice, obesity and behaviour change, and healthy middle-ageing.

Diane M. Martin
Diane is a Professor of Marketing in the School of Economics, Finance and Marketing at RMIT University. Diane's expertise is in ethnographic and qualitative research in the areas of consumer behaviour, new market development and sustainability. Her award-winning scholarship is published in numerous journals in marketing and communication.

Larissa Hjorth
Larissa is Distinguished Professor and Director of RMIT's Enabling Capability Platform, Design & Creative Practice. Hjorth is a digital ethnographer, creative practitioner, and media researcher.
Hjorth has successfully led 20 international and national grants—projects which have focused on intergenerational and cross-cultural approaches to digital ethnography.

Jacob Sheahan
Jacob is a PhD Candidate in the School of Design at RMIT University. Trained as an Industrial Designer, his research focuses on socially complex contexts such as ageing and safety, interrogating the role of design and emerging technologies in supporting social interactivity and healthy ageing.

Mark Buschgens
Mark is a lecturer in marketing at Waikato Management School & a PhD graduate of RMIT University's School of Economics, Finance and Marketing. Over the last 12 years, he has held academic and industry roles in creative design and marketing in various institutions in Australia, California, and the Middle East.

Jozica Kutin
Dr Jozica Kutin is a Senior Researcher at Victoria Law Foundation and RMIT University. Her research focuses on financial abuse, financial capability, survey methodology and access to justice.

Mr Glen Wall
Glen is a Vice President of U3A Network Victoria , and developed the program 'Building Community Engagement". It focuses on the improvement in digital literacy of seniors to better connect to the broader community to improve their wellbeing.

Anne Grigg
Anne is a Vice President of U3A Network Victoria , having worked as the Members Services Manager at U3A Network Victoria before her second retirement. In her U3A roles and as a leader in Primary Schools, she has a strong interest in developing community relationships for the benefit of all.
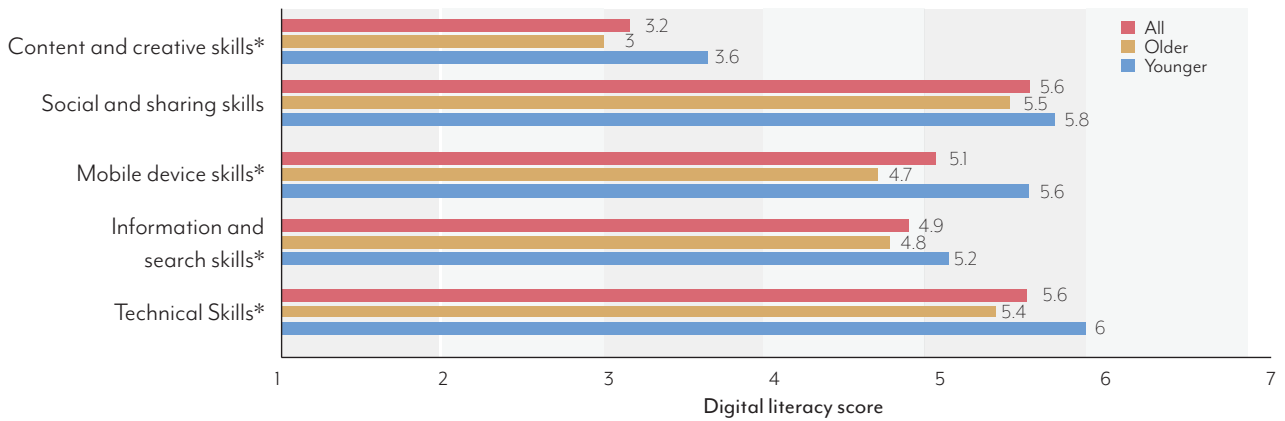
7. Appendix
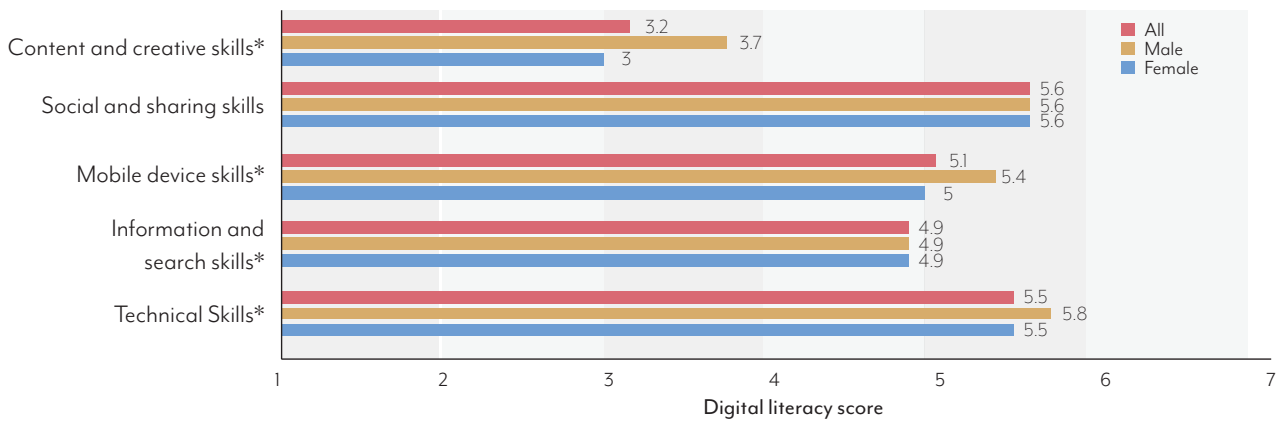

Figure 27. Digital literacy scores and age

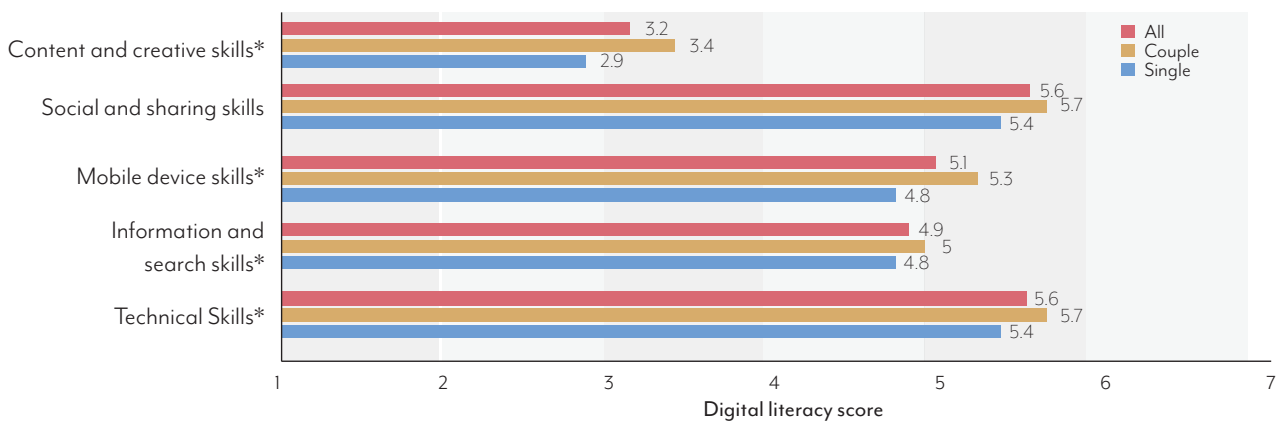Figure 28. Digital literacy scores and gender

Figure 29. Digital literacy scores and relationship status

8. List of Publications

Figueiredo, B., Aleti, T., Reid, M., Martin, D. M., Hjorth, L., Buschgens, M., Kutin, J., Sheahan, J. (2021) Reducing Perceived Risk and Promoting Digital Inclusion for older Australians. *Australian Communications Consumer Action Network*, Sydney. ISBN: 978-1-921974-69-4.

Hjorth, L., Sheahan, J., Figueiredo, B., Martin, D. M., Reid, M., & Aleti, T. (2021). Technology: Strengthening digital social inclusion. *Australian Ageing Agenda*

Mike Reid, M., Figueiredo, B., Aleti, T., Martin, D.M., Hjorth, L., Buschgens, M., Kutin, J., Sheahan, J., and Peile, R., "Understanding factors influencing seniors' anxiety in using ICT" *(Working Paper)*

Mike Reid, M., Figueiredo, B., Aleti, T., Martin, D.M., Hjorth, L., Buschgens, M., Kutin, J., Sheahan, "Understanding factors influencing older adults' Desire to be more proficient in using ICT" *(Working Paper)*

Hjorth, Larissa; Sheahan, Jacob; Figueiredo, Bernardo; Martin, Diane; Reid, Mike; Aleti, Torgeir; Buschgens, Mark "Digital Aging Futures" *(Working Paper)*

Working Paper: Aleti, T., Figueiredo, B., Mike Reid, M., Martin, D.M., Hjorth, L., J., Sheahan "Seniors' Internet Skills, Risk Perception & Digital Participation" *(Working Paper)*

9. References

ABS. (2020). Twenty years of population change. Retrieved from Australian Bureau of Statistics website: https://www.abs.gov.au/articles/twenty-years-population-change

ACCC. (2021a). Romance baiting scams on the rise. Retrieved from https://www.accc.gov.au/media-release/romance-baiting-scams-on-the-rise

ACCC. (2021b). Targeting scams: Report of the ACCC on scams activity 2020. Retrieved from www.accc.gov.au

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Aleti, T., Figueiredo, B., Reid, M., Martin, D., & Wall, G. (2019). Consumer socialisation across the digital divide. In J. E. Richard & D. Kadirov (Eds.), Australia and New Zealand Marketing Academy (ANZMAC). Retrieved from https://confer.nz/anzmac2019/wp-content/uploads/2020/03/ANZMAC-2019-Final-Proceedings-23.03.2020.pdf

Bagozzi, R. P., Davis, F. D., & Warshaw, P. R. (1992). Development and Test of a Theory of Technological Learning and Usage. Human Relations, 45(7), 659–686. https://doi.org/10.1177/001872679204500702

Boise, L., Wild, K., Mattek, N., Ruhl, M., Dodge, H. H., & Kaye, J. (2013). Willingness of older adults to share data and privacy concerns after exposure to unobtrusive home monitoring. Gerontechnology, 11(3), 428–435. https://doi.org/10.4017/gt.2013.11.3.001.00

Broos, A. (2005). Gender and information and communication technologies (ICT) anxiety: Male self-assurance and female hesitation. Cyberpsychology and Behavior, 8(1), 21–31. https://doi.org/10.1089/cpb.2005.8.21

Chen, K., & Chan, A. H. S. (2014). Predictors of gerontechnology acceptance by older Hong Kong Chinese. Technovation, 34(2), 126–135. https://doi.org/10.1016/J.TECHNOVATION.2013.09.010

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly: Management Information Systems, 13(3), 319–339. https://doi.org/10.2307/249008

Fishbein, M., & Ajzen, I. (1972). Attitudes and opinions. Annual Review of Psychology, 23, 487–544.

Guner, H., & Acarturk, C. (2020). The use and acceptance of ICT by senior citizens: a comparison of technology acceptance model (TAM) for elderly and young adults. Universal Access in the Information Society, 19(2), 311–330. https://doi.org/10.1007/s10209-018-0642-4

James, B. D., Boyle, P. A., & Bennett, D. A. (2014). Correlates of Susceptibility to Scams in Older Adults Without Dementia. Journal of Elder Abuse and Neglect, 26(2), 107–122. https://doi.org/10.1080/08946566.2013.821809

Knowles, B., & Hanson, V. L. (2018). The wisdom of older technology (non)users. Communications of the ACM, 61(3), 72–77. https://doi.org/10.1145/3179995

Lloyds Bank. (2021). UK Consumer Digital Index 2021. Retrieved from https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/LB-Consumer-Digital-Index-2018-Report.pdf

Maccora, J., Rees, K., Hosking, D., & McCallum, J. (2019). Senior Surfers: Diverse levels of digital literacy among older Australians. Retrieved from https://nationalseniors.com.au/research/social-connectedness-communities/senior-surfers-diverse-levels-of-digital-literacy-among-older-australians

Mitchell, V. (1999). Consumer perceived risk: conceptualisations and models. European Journal of Marketing, 33(1/2), 163–195. https://doi.org/10.1108/03090569910249229

Mitzner, T. L., Boron, J. B., Fausset, C. B., Adams, A. E., Charness, N., Czaja, S. J., ... Sharit, J. (2010). Older adults talk technology: Technology usage and attitudes. Computers in Human Behavior, 26(6), 1710–1721. https://doi.org/10.1016/j.chb.2010.06.020

Rehman, Z. U., Baharun, R., & Salleh, N. Z. M. (2020, January 4). Antecedents, consequences, and reducers of perceived risk in social media: A systematic literature review and directions for further research. Psychology and Marketing, Vol. 37, pp. 74–86. https://doi.org/10.1002/mar.21281

Ross, I. (1975). Perceived Risk and Consumer Behavior: a Critical Review. Advances in Consumer Research, 2, 1–20. Retrieved from http://www.acrwebsite.org/volumes/display.asp?id=5741

Scamwatch. (2021). Scamwatch, ACCC (Australian Competition & Consumer Commission). Retrieved from https://www.scamwatch.gov.au/

Stone, R. N., & Grønhaug, K. (1993). Perceived Risk: Further Considerations for the Marketing Discipline. European Journal of Marketing, 27(3), 39–50. https://doi.org/10.1108/03090569310026637

Thomas, J., Barraket, J., Wilson, C. K., Holcombe-James, I., Kennedy, J., Rennie, E., ... MacDonald, T. (2020). Measuring Australia's digital divide: the Australian digital inclusion index 2020. https://doi.org/10.25916/5f6eb9949c832

van Deursen, A. J. A. M., Helsper, E. J., & Eynon, R. (2016). Development and validation of the Internet Skills Scale (ISS). Information Communication and Society, 19(6), 804–823. https://doi.org/10.1080/1369118X.2015.1078834

Wu, Y. H., Damnée, S., Kerhervé, H., Ware, C., & Rigaud, A. S. (2015). Bridging the digital divide in older adults: A study from an initiative to inform older adults about new technologies. Clinical Interventions in Aging, 10, 193–201. https://doi.org/10.2147/CIA.S72399

Young, R., Willis, E., Cameron, G., & Geana, M. (2014). "Willing but Unwilling": Attitudinal barriers to adoption of home-based health information technology among older adults. Health Informatics Journal, 20(2), 127–135. https://doi.org/10.1177/1460458213486906