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Bridging the grey digital divide:

Enhancing ICT learning for older adults

Research report

Education 2030

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Its publications are a valuable resource for education researchers, planners, policy-makers and practitioners. While the programmes of UIL are established along the lines laid down by the General Conference of UNESCO, the publications of the Institute are issued under its sole responsibility.

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Foreword

By Isabell Kempf, Director,
UNESCO Institute for Lifelong Learning

Digital inclusion is no longer a luxury – it is a necessity for full participation in modern society. Yet older adults around the world continue to face persistent barriers in accessing and using digital technologies, contributing to a widening 'grey digital divide'. Addressing this divide is vital to enable older adults to lead autonomous, healthy and connected lives, in addition to promoting equity and social inclusion.

This research report, *Bridging the Grey Digital Divide: Enhancing ICT Learning for Older Adults*, explores how organizations across diverse national and regional contexts are supporting digital learning opportunities for older adults. Through six case studies from across five UNESCO regions, it presents a rich array of practices and strategies adopted by independently funded non-profit organizations, community learning centres operating under the auspices of national and local governments, foundations and adult education institutions drawing on a combination of private and public funding sources while maintaining links with universities, and other stakeholders working to close the digital gap for older learners. These examples demonstrate that with the right support structures and pedagogical methods – such as tailored learning programmes, age-friendly technology environments, and intergenerational collaboration – older adults can, and do, engage meaningfully with digital technologies.

The report also examines broader policy frameworks and learning infrastructures that enable or constrain digital inclusion for older populations. In doing so, it contributes to global knowledge on how ICT learning can be integrated into lifelong learning systems in an age-inclusive and empowering way.

This study forms part of the joint international research project between the UNESCO Institute for Lifelong Learning (UIL) and Shanghai Open University (SOU) on the benefits of lifelong learning for older adults. It was implemented in cooperation with the Institute for the Future of Education (IFE) at Tecnológico de Monterrey.

We hope that the findings and examples shared in this report will inform policy-makers, educators and practitioners, and inspire stronger, more coordinated and inclusive efforts to bridge the grey digital divide – ensuring that no one is left behind in the digital age.

By Jia Wei,
President of Shanghai Open University, China

This research report, *Bridging the Grey Digital Divide: Enhancing ICT Learning for Older Adults*, is a core outcome of the joint international research project between the UNESCO Institute for Lifelong Learning (UIL) and Shanghai Open University (SOU) on the benefits of lifelong learning for older adults. The topic aligns closely with SOU's longstanding commitment to the education of older adults, in which it has been deeply engaged for more than three decades. Notably, it is an honour that the practical case of Shanghai University for the Senior (Shanghai Branch of the National University for the Senior), which is affiliated with SOU, has been included in the report as a representative Chinese example.

In an era where digital technology is reshaping the fabric of society, the 'digital divide for older adults' has gone beyond the technical realm to become a key issue of social equity and well-being. From the National Plan for Enhancing Digital Literacy and Skills at the national level to Shanghai's 14th Five-Year Plan for the Development of Older People Education at the municipal level, policy orientations have consistently sought to enable older adults to master information and communication technologies (ICTs) on an equal footing and to integrate into digital life. This is not only a pathway to safeguarding older adults' autonomy in daily life and sense of social participation, but also the original aspiration behind SOU's collaborative research with UIL.

As a co-initiator of the project, SOU has developed a three-dimensional practical approach – 'technology adaptation + targeted curriculum + community support' – based on its understanding of older adults' learning needs. This approach is highlighted in the case study included in the report, 'Shanghai University for the Senior: Advancing digital inclusion and lifelong learning for older adults in China' (see p. 47). It addresses barriers to technology use through age-friendly adaptations; responds to learning needs ranging from basic operations to smart applications through a sequence of courses; and alleviates technology-related anxiety through intergenerational co-learning and community support. This system has already reached tens of thousands of older adults and has received strong recognition from the local community.

This report, a product of the joint efforts of UIL and SOU, not only presents international experiences in bridging the digital divide for older adults but also illustrates the

multi-stakeholder approach to older adult education practised by SOU, involving universities, communities and enterprises. Shanghai Open University values this collaborative achievement and is pleased to share its experience through this report, while looking forward to deepening cooperation with partners worldwide. We firmly believe that digital education for older adults should be both empowering and enriching. We are committed to building a vibrant learning ecosystem that enables every older adult to embrace digital life and to realize the vision of lifelong learning, joyful living and meaningful contribution.

By Michael Fung, Executive Director, Institute for the Future of Education, Tecnológico de Monterrey

The challenges and opportunities of our rapidly evolving digital world demand collaborative, cross-sectoral and multi-stakeholder responses. As the global population ages, ensuring that older adults can access, navigate and benefit from digital technologies is not only a matter of inclusion, but also a prerequisite for their full participation in civic, social and economic life. Bridging this 'grey digital divide' requires not only innovative learning models, but also strong partnerships that bring together diverse expertise, perspectives and resources to facilitate access to relevant lifelong learning opportunities for rapidly ageing populations around the world.

It is in this spirit that the Institute for the Future of Education (IFE) at Tecnológico de Monterrey collaborated with the UNESCO Institute for Lifelong Learning (UIL) to deepen understanding of how lifelong learning systems can respond effectively to the needs of older learners in the digital age. Together, we have sought to integrate UIL's established global perspective on lifelong learning with IFE's experience in educational innovation, technology integration and the creation of inclusive learning ecosystems.

This collaboration has allowed us to explore, document and share practices that are not only effective in addressing the technological learning needs of older adults, but also scalable and adaptable to different cultural, social and policy contexts. Through this work, we reaffirm our shared commitment to making learning accessible to all, at every stage of life, in the transition to a more connected, technology-driven future.

We envision that our joint efforts will help to inspire action to build lifelong learning systems that are both inclusive and future-ready – systems where digital skills and lifelong learning are seen not as a privilege, but as a universal right that empowers individuals to live engaged and purposeful lives. Through these transformed learning systems, we will improve the lives of millions of people around the world.

Acknowledgements

This report is part of a broader international research project on the benefits of lifelong learning for older adults, conducted jointly by the UNESCO Institute for Lifelong Learning (UIL) and Shanghai Open University (SOU) from 2023 to 2025. The project team would like to express our sincere gratitude to Mr Wei Jia, President of SOU, Ms Jin Zhang, Vice President of SOU, as well as our colleagues Ms Zhuhua Weng, Ms Yu Han and Ms Yuan Wang for their unwavering support and close collaboration throughout the past three years.

The research project comprises three thematic studies, focusing respectively on: reskilling and upskilling; intergenerational learning; and digital learning for older adults.

This report, *Bridging the Grey Digital Divide: Enhancing ICT Learning for Older Adults*, was co-implemented by UIL and the Institute for the Future of Education (IFE).

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- Uxía Regueira, University of Santiago de Compostela, Spain
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- Olivia Hernandez-Pozas, Institute for the Future of Education, Tecnológico de Monterrey, and EGADE Business School, Monterrey, Mexico
- Maria Łuszczyńska, Krakow University of Economics, Krakow, Poland
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Christiane Marwecki was responsible for the design of the publication.

1. Introduction

Virginia Rodés-Paragarino[1]

In digital societies, information and communication technologies (ICTs) have become central to participation in everyday life, from accessing public services and healthcare to maintaining social relationships and engaging in continuous learning (ALA, 2021; Grynova, Khimchuk and Szymczyk, 2020). However, as global populations age, a growing divide, commonly referred to as the 'grey digital divide', has emerged between younger, digitally fluent generations and older adults, who often lack the digital skills necessary to benefit from technological advancements (Mubarak and Suomi, 2022; UNECE, 2021). This divide reflects broader socio-economic and structural inequalities, including disparities in access, digital literacy and societal attitudes towards ageing (Chu, Lo and Yeo, 2022; OECD, 2001, 2019c).

Many recent studies have pointed to the specific benefits that ICTs offer older adults, from cognitive stimulation and health management to improved social inclusion and continued labour market participation (Bakshi and Bhattacharyya, 2021; Peine and Neven, 2021). Despite this, older adults face challenges in engaging with ICTs due to age-related impairments, educational levels (Shou, Yu and Pei, 2025) and prior tech-related job experience (Glowacki *et al.*, 2021), and the rapid evolution of technologies. Against this backdrop, understanding how older people acquire digital skills and the ways in which these processes are shaped by political, social and technological frameworks is a pressing concern of educational gerontology and lifelong learning policy.

Governments shape digital inclusion through policies, funding and e-services; social factors such as cultural attitudes, community support and lifelong learning foster skill acquisition; and accessible, user-friendly technologies help overcome barriers (Sharma *et al.*, 2016). Together, these frameworks determine how older adults engage with digital tools and highlight the need for inclusive, supportive and accessible approaches to ensure their participation in the digital age. As digital technologies increasingly shape access to essential services, ensuring that older people are not left behind requires a nuanced understanding of their specific learning needs, the barriers they face and the structural conditions that enable or hinder their digital inclusion.

1.1 Political discourses and policy frameworks

International policy frameworks have long addressed the implications of ageing, focusing initially on expanding social welfare for older adults and more recently addressing the issue of the grey digital divide. The 1982 Vienna International Plan of Action on Ageing and the 1991 UN Principles for Older Persons laid foundational human-rights principles for older individuals, such as dignity, participation and self-fulfilment (UN, 1982, 1991). These were reinforced by the 2002 Madrid International Plan of Action on Ageing, which called for inclusive policies to enable older people to contribute meaningfully throughout their lifespans (UN, 2002). The World Health Organization's (WHO) active ageing framework (WHO, UNFPA and HelpAge International, 2002) further institutionalized the concept of 'active ageing', positioning lifelong learning, including ICT, as a pillar of well-being in later life.

More recent policies, such as the UN Roadmap for Digital Cooperation (Guterres, 2020), include universal digital inclusion as a key principle, while the OECD and European Union have called for more substantial incentives to extend working trajectories and provide continuous upskilling for older workers (Harasty and Ostermeier, 2020; OECD, 2023; PwC, 2021). Regional and national policies vary in scope. For example, Australia's $50 million investment to support older adults' digital inclusion adopts a targeted approach (ACMA, 2016). However, many policies incorporate digital skills acquisition into broader lifelong learning agendas, sometimes overlooking the specific needs of older populations (Beblavý and Bačová, 2022). At the local level, initiatives such as the WHO's Age-Friendly Cities promote environments conducive to healthy ageing. However, digital inclusion is often not addressed in a comprehensive or systematic manner, highlighting a need to integrate ICT-related components into holistic ageing strategies (Jarke, 2021).

1 Institute for the Future of Education, Tecnológico de Monterrey, and EGADE Business School, Monterrey, Mexico

1.2 Understanding older learners in the digital age: Definitions, motivations, benefits and barriers to ICT engagement

Defining who qualifies as an 'older learner' is complex, with chronological, functional and social definitions co-existing side by side. For instance, the WHO designates individuals aged 60 and above as older adults, while OECD retirement age thresholds average at around 64 years (OECD, 2021). Alternatively, sociological perspectives distinguish between the 'third age', denoting active post-retirement life, and the 'fourth age', associated with increased dependency and frailty (Gilleard and Higgs, 2015).

Older learners are heterogeneous, and factors such as education, gender, health status and socio-economic background shape digital engagement. Prior work experience and pre-retirement ICT use, for instance, correlate strongly with post-retirement digital competence (Friemel, Frey and Seifert, 2021). Income and education are significant predictors of ICT usage, and gendered differences persist, with men often favouring instrumental uses and women prioritizing social connectivity (Bakshi and Bhattacharyya, 2021; Ihm and Hsieh, 2015).

The motivations behind older adults engaging in ICT learning are diverse too. The European Commission identifies three principal reasons: to gain knowledge, to perform specific tasks and as a meaningful activity in itself (European Commission, 2008). 'Learning to know' involves using ICT to access information, particularly health-related resources (Marston et al., 2019; Vacek and Rybenska, 2015). 'Learning to do' refers to mastering tools for communication, banking, shopping or staying in touch with family (Abbey and Hyde, 2009; Pihlainen *et al*., 2023). Lastly, 'learning as an activity' covers intrinsic motivations, such as self-improvement, acquiring certifications or deriving enjoyment from the process (Sandhu, Damodaran and Ramondt, 2013). These motivations are deeply influenced by perceived usefulness, ease of use and social encouragement (Finkelstein, Wu and Brennan-Ing, 2023; Mitzner *et al*., 2010). Social support, especially from family or peers, significantly increases participation (Friemel, Frey and Seifert, 2021). Learning is also conditioned by social norms: older adults are more inclined to embrace technology when it is embedded in their community practices and relationships (Tyler, De George-Walker and Simic, 2020).

The benefits of acquiring digital skills are multi-dimensional. Socially, ICT enhances connectedness, reduces loneliness and facilitates intergenerational communication (Llorente-Barroso, Kolotouchkina and Mañas-Viniegra, 2022; Yeung *et al*., 2022). Medically, it enables health self-management and access to critical services while providing cognitive stimulation through digital tools and interventions (Ferreira *et al*., 2015; Zhang *et al*., 2019). Even short-term ICT training has improved older adults' perceptions of their quality of life (Lee *et al*., 2022). Practically, digital competency supports independent living by enabling access to everyday services such as e-banking and e-governance (Bakshi and Bhattacharyya, 2021). It also opens avenues for societal participation through volunteering, lifelong learning and civic engagement (Ihm and Hsieh, 2015). Economically, ICT skills contribute to employability and extend working lives, a critical consideration in ageing societies facing pension sustainability challenges (Morrow-Howell, O'Neill and Greenfield, 2010).

Despite the well-documented benefits of digital inclusion, older adults continue to face significant barriers to ICT adoption. The 'grey digital divide' can be understood in terms of three layers: primary (lack of access), secondary (lack of skills) and tertiary (lack of meaningful outcomes) (Friemel, Frey and Seifert, 2021). Financial constraints and geographic disparities limit access to devices and reliable infrastructure, particularly in rural and low-income areas (European Commission, 2022). Furthermore, age-related impairments – such as cognitive decline, poor vision and reduced mobility – intensify difficulties in navigating digital interfaces (Charness and Boot, 2009; Schlomann, Even and Hammann, 2022). Compounding these challenges is the fact that many digital technologies are not designed with older users in mind. Poor interface design, rapid technological turnover and lack of adequate instructions further hinder adoption (Castleton, Cid and Silva, 2020; Peine and Neven, 2021), underscoring the urgent need for inclusive design principles and greater collaboration between gerontology and technology development (Charness and Boot, 2009).

Even when access to technology is available, low levels of digital skills, confidence and tailored support continue to limit meaningful engagement (Han and Nam, 2021; Sandhu, Damodaran and Ramondt, 2013). For instance, although technology adoption among older adults in the United States has approached 50 per cent, many remain digitally disconnected due to a reliance on others to configure devices or a lack of confidence in using them independently (Anderson and Perrin, 2017). The COVID-19 pandemic vividly illustrated these disparities. While the crisis accelerated digitalization and emphasized the necessity of digital access, it also exposed profound inequalities in digital participation, with older adults disproportionately affected (UNECE, 2021; Xie *et al*., 2020). Although many older individuals needed to expand their ICT use during lockdowns, a substantial proportion were unable to acquire the necessary skills (Li *et al*., 2021).

Nonetheless, those who successfully adopted ICT during the pandemic reported improved social connectivity and enhanced access to remote services (Bakshi and

Bhattacharyya, 2021; Nai, Tan and Tov, 2023). Importantly, the crisis also demonstrated the potential of online education for older learners. Emerging evidence from countries such as India and Spain suggests that virtual learning not only reduced geographic barriers but also contributed positively to participants' emotional well-being (Llorente-Barroso, Kolotouchkina and Mañas-Viniegra, 2022).

In addition to access and skills-related challenges, attitudinal barriers persist. Ageism, for instance, presents a substantial attitudinal barrier. Negative societal stereotypes contribute to internalized beliefs that older adults cannot or should not engage with technology, resulting in lowered motivation and participation (Gilleard and Higgs, 2015; Köttl and Mannheim, 2021). Perceived risks of ICT, such as data privacy and online scams, further discourage engagement (Bakshi and Bhattacharyya, 2021). To overcome these barriers, learning programmes and models that address older adults' unique needs – emotional, attitudinal and design – are an understated necessity.

1.3 Shaping lifelong digital learning: Learning modalities, pedagogical strategies and the need for inclusion

Modalities of ICT learning for older adults

Older adults engage with ICT learning through formal, non-formal and informal modalities. Formal learning includes certified courses at educational institutions, while non-formal and informal learning rely on community centres, family support or self-learning (European Commission, 2008; Pihlainen, Korjonen-Kuusipuro and Kärnä, 2021). The availability and structure of these opportunities vary widely across countries and are often shaped by national policy frameworks (Beblavý and Bačová, 2022).

Universities have increasingly become hubs for older learners, primarily through distance learning and community engagement programmes (Llorente-Barroso, Kolotouchkina and Mañas-Viniegra, 2022). However, teachers and facilitators require specialized training to support older learners effectively. Challenges include the need for repetition, empathy and understanding age-related impairments (Grynova, Khimchuk and Szymczyk, 2020; Mubarak and Suomi, 2022). The most effective programmes incorporate flexibility, patience and user-centred approaches.

Peer-to-peer learning and intergenerational teaching models have also shown substantial promise. For instance, informal peer-led learning and intergenerational exchanges have been shown to play a vital role in skills acquisition and fostering social bonds (Tsai, Shillair and Cotten, 2017). Peer tutors often report increased well-being and a sense of purpose, making such models mutually beneficial (Pihlainen, Korjonen-Kuusipuro and Kärnä, 2021). Older learners also often feel more comfortable learning from peers, who share similar life experiences and may convey knowledge in more relatable terms (Pihlainen, Korjonen-Kuusipuro and Kärnä, 2021; Tsai, Shillair and Cotton, 2017). Intergenerational approaches, where young people act as digital mentors, foster mutual respect and emotional bonding, while combating stereotypes about ageing and digital incompetence (Zhang *et al.*, 2019).

Pedagogical strategies that support effective ICT learning among older adults

Effective ICT education for older adults requires pedagogical strategies tailored to their diverse cognitive, emotional and physical characteristics. Educational gerontology emphasizes learner-centred, empathetic instruction, which values older individuals' experiences and personal narratives (Grynova, Khimchuk and Szymczyk, 2020; Mubarak and Suomi, 2022). Among the most effective approaches are constructivist and experiential learning methods, which promote active engagement through hands-on practice and problem-solving activities (Sandhu, Damodaran and Ramondt, 2013). Repetition, pacing and visual clarity are fundamental in instructional design for older adults. Learning sessions' durations should be limited to accommodate potential fatigue and allow memory consolidation. Printed materials with large fonts, simplified instructions and multimodal content can also improve comprehension and retention (Charness and Boot, 2009; Kärnä *et al.*, 2022).

Flexibility in learning pathways is essential. Programmes should accommodate a variety of objectives, from basic digital literacy to advanced engagement with e-services, health portals or even content creation (Abbey and Hyde, 2009; Ferreira *et al.*, 2015). Moreover, embedding digital education in meaningful contexts, such as hobbies, civic activities or health practices, makes learning more relevant and motivating.

Addressing digital inclusion through institutional practices, public policy and needs-based technology design

The digital experiences of older adults are shaped by intersecting axes of inequality, including gender, socio-economic status, education, race, disability and geographical location. These factors influence access to technology, attitudes toward learning and digital engagement outcomes (Bakshi and Bhattacharyya, 2021; Ihm and Hsieh, 2015). Gendered digital divides persist in later life, often reflecting historical disparities in educational and labour market participation. Notably,

older women are more likely to have lower digital skills due to limited exposure to ICT during their working lives. They also face more risks of exclusion in ICT-based health services, financial tools and civic platforms (Peine and Neven, 2021). Nonetheless, studies show that women are more likely to engage in ICT for social and familial purposes, which can serve as an entry to digital education (Llorente-Barroso, Kolotouchkina and Mañas-Viniegra, 2022).

Low-income older adults face multiple forms of exclusion. They are less likely to be able to afford devices, internet subscriptions or tuition fees for digital learning programmes (European Commission, 2022). Moreover, those living in rural or underserved areas frequently lack access to digital infrastructures and public support services (UN, 2002; UNECE, 2021). Migrant and ethnic minority older populations encounter additional barriers due to language, citizenship status and institutional discrimination (Finkelstein, Wu and Brennan-Ing, 2023). ICT learning initiatives therefore must adopt an intersectional lens to address these challenges. Tailoring programmes to the specific life trajectories and needs of diverse older people ensures greater relevance and inclusiveness (Friemel, Frey and Seifert, 2021; Köttl and Mannheim, 2021). More broadly, policy frameworks must transcend age as a homogenous category to address the compounded effects of multiple exclusions.

Numerous institutional practices offer valuable insights into successful implementation of ICT education for older adults. Universities of the Third Age (U3As) across Europe and Latin America have pioneered community-based learning, offering non-formal education grounded in peer learning and shared governance (Llorente-Barroso, Kolotouchkina and Mañas-Viniegra, 2022). These institutions empower older adults by recognizing them as learners and contributors to the educational process. Open universities and online platforms have also begun diversifying their offerings to include older learners. For instance, some have developed age-friendly user interfaces and modular courses that allow learners to progress at their paces (Castleton, Cid and Silva, 2020). In addition, public libraries and community centres often serve as vital access points, particularly in low-income or rural areas, providing infrastructure and social support (ALA, 2021).

National strategies, such as Australia's investment in digital inclusion or European Commission-funded initiatives, provide macro-level frameworks that can be adapted to local contexts (ACMA, 2016; OECD, 2023). Nonetheless, the success of such initiatives often hinges on collaboration among multiple stakeholders, including governments, civil society organizations, technology providers and educational institutions (PwC, 2021). One noteworthy model is Finland's peer-tutoring approach, where digitally skilled older adults train their peers in community settings. This model addresses the digital divide and social isolation while fostering a sense of purpose and dignity among trainers (Pihlainen, Korjonen-Kuusipuro and Kärnä, 2021). Meanwhile, an Indian model employs mobile learning units, bringing digital education to remote and underserved populations through community vans equipped with internet-connected devices and trainers (Bakshi and Bhattacharyya, 2021).

Technological advances continue to reshape the landscape of digital inclusion for older adults. The range of ICTs relevant to older adults has expanded to go beyond computers and smartphones to include assistive technologies, wearables, smart home devices and cognitive training applications, some of which also incorporate artificial intelligence (AI) and virtual reality (VR). However, their success depends on the extent to which these technologies are co-designed with older users to ensure usability, accessibility and cultural relevance. Older adults often prefer mobile phones for their portability and simplicity, while underusing more complex tools like tablets (Bakshi and Bhattacharyya, 2021; Castleton, Cid and Silva, 2020). Design features can be decisive for either enabling or obstructing adoption. Common obstacles include small text, unintuitive navigation and frequent software updates that require relearning (Kärnä *et al*., 2022; Sandhu, Damodaran and Ramondt, 2013). Technological integration into everyday materials and environments also affects usability and relevance (Rohner *et al*., 2021). Therefore, aligning older adults' preferences with learning tools designs is critical for sustained engagement.

AI, VR and voice-activated systems can potentially reduce barriers by simplifying interfaces, personalizing support and offering alternative modalities for users with limited literacy or mobility (Khosravi, Rezvani and Wiewiora, 2016; Zhang, 2023), although ethical concerns about data privacy, algorithmic bias and autonomy must be addressed through inclusive governance frameworks (Guterres, 2020). Assistive technologies, such as digital health monitors, fall detection systems and smart home devices, also offer new opportunities for enhancing autonomy and quality of life. However, the high cost and lack of digital readiness can limit adoption (Peine and Neven, 2021). Therefore, public funding and inclusive procurement strategies are critical to scale these innovations equitably. Finally, hybrid and blended learning models are also promising as they combine the flexibility of online education with the relational and hands-on benefits of face-to-face interactions, and are especially relevant for older learners who benefit from both social engagement and technological support (Finkelstein, Wu and Brennan-Ing, 2023).

ICT learning for older adults: Key areas of inquiry

The existing literature offers a broad understanding of ICT learning among older adults, and also reveals several critical areas requiring deeper investigation. Foremost is the need to understand how digital learning designs can better align with older learners' diverse needs, capacities

and aspirations in various cultural contexts. The first inquiry should concern the potential benefits and risks of ICT skills development for older people in relation to their well-being and social integration. This includes examining outcomes such as social inclusion, labour market participation, cognitive stimulation, self-efficacy and reduced loneliness. How ICT learning may contribute to individual empowerment and societal inclusion is a necessary consideration, recognizing that, in some contexts, technology utilization may bring limited benefits or even negative consequences.

A second major inquiry should focus on how to design and implement ICT learning interventions that respond to older adults' complex and heterogeneous characteristics. Despite mounting empirical evidence, what constitutes effective pedagogy for digital inclusion in later life remains underexplored. The digital literacy gap, physical and cognitive barriers, motivational differences and diverse skill levels are key considerations. Effective learning environments must be sensitive to these factors, incorporating various modalities, pacing and facilitation strategies that foster engagement and retention. Moreover, social support from peers, family members or community educators is necessary to sustain participation. Therefore, the socio-technical systems in which learning occurs must be inclusive, adaptable and co-designed with older adults to ensure that interventions are accessible, meaningful and empowering.

Finally, developing and implementing effective policy frameworks are indispensable for ensuring equitable access to ICT learning in ageing societies. These must assess current international, regional and local strategies, identify successful examples and address existing gaps. Forward-looking policies must promote technological innovation while focusing on lifelong learning, digital equity and social participation. Such frameworks should be empirically grounded and adaptable to diverse contexts, with particular attention to the challenges faced by low- and middle-income countries and under-served populations. Comparative policy analysis can also illuminate how global ageing trends intersect with national education and digital strategies, guiding the creation of responsive and sustainable initiatives that ensure older adults are not excluded from the opportunities of the digital age.

1.4 The present study

Research aims, conceptual framework and methodology

The present study aims to contribute to the academic literature on digital inclusion in later life by examining enabling policy environments and inclusive strategies for digital skills development among older adults, with a specific focus on addressing the needs of socio-economically disadvantaged populations. A case study methodology is applied to analyse how inclusive digital learning strategies are conceptualized and experienced across varied institutional and geographic contexts. Six case studies were conducted in five UNESCO regions, covering initiatives in Bahrain, Chile, the People's Republic of China, Poland, South Africa and the United States of America. The studies offer comparative insights into designing and implementing ICT learning programmes, examining learner engagement, motivation, perceived outcomes, and the institutional, pedagogical and policy factors that enable or constrain their success. This work addresses key issues of equity, accessibility and the long-term sustainability of digital inclusion for ageing populations. By highlighting successful strategies and implementation challenges, the study contributes to bridging the digital divide that excludes people in later life, providing evidence-based recommendations for developing inclusive, context-sensitive and forward-looking policies and educational practices that promote active ageing in the digital era.

A comprehensive literature review was conducted to inform the case studies, followed by the development of research questions. The study aimed to investigate the key questions about digital skills learning strategies for older adults (see **Box 1.1**).

BOX 1.1 Research questions

1. How do national, regional and local policies and strategies facilitate the provision of accessible and inclusive digital skills learning opportunities for older adults?
2. How does ageism manifest itself in digital performance, and how can it be mitigated through digital skills learning initiatives?
3. What key attributes must older learners acquire to gain confidence and competence in navigating the digital world?
4. What critical factors contribute to the successful implementation of inclusive digital skills learning interventions for older adults?

   4.1 What strategies can ensure equitable access for all older adults, regardless of socio-economic background, location or physical ability?

   4.2 How can older adults' unique needs, learning styles and capabilities be effectively addressed through non-formal education and informal learning?

4.3 How can digital skills programmes effectively address the needs of socio-economically disadvantaged older adult groups (e.g. gender – older women; ethnicity; disability), considering factors such as access to technology, inclusive design, affordability, digital literacy levels and attitudes towards technology?

5. How do digital skills interventions facilitate access to essential services (e.g. healthcare, government services), improve health outcomes, enhance social connectedness and boost economic opportunities for older adults?
6. What broader societal benefits result from successful digital skills learning interventions for older adults?

Case selection

The key criterion for case selection was the rationale of inclusivity of older adults in the educational programme. The selected institutions have elaborated designs and implemented digital skills learning programmes for older adults with a track record of several years. The regional balance of cases was considered in the selection.

Data collection and analysis

Data collection occurred through semi-structured interviews with programme implementers and older learners, the analysis of institutional and policy documents and review of evaluation reports. Interview guides were tailored to each stakeholder group to gather information on programme objectives, pedagogical strategies, learner engagement, challenges encountered and observed outcomes. The data sources were triangulated to ensure validity and depth of analysis. Each case study involved the perspectives of at least one institutional representative, one educator and two learners.

Thematic analysis identified recurrent patterns and distinctive features across the cases, which were informed by the conceptual framework (educational gerontology, critical digital literacy and capabilities approach). Attention was paid to the interplay between individual agency and structural factors, including policy environments, institutional cultures and technological infrastructures.

Ethical considerations were prioritized throughout the study. Participants were informed of the purpose and scope of the research and gave written consent. Anonymity and confidentiality were maintained, and local cultural norms were respected during the interviews. Interviews were conducted in the participants' preferred language and, when necessary, translation and transcription services were employed to ensure accuracy.

TABLE 1.1 Case selection

Region	Country	Programme name	Provider
Africa	South Africa	iGOGO	goGOGOgo
Arab States	Kingdom of Bahrain	Abdullah Bin Yousef Fakhr Social Club for Parents	Bahrain's Ministry of Social Development
Asia and the Pacific	People's Republic of China	Shanghai University for the Senior	Shanghai Open University
Europe and North America	United States of America	Senior Planet	Older Adults Technology Services (OATS) by AARP Foundation
Europe and North America	Poland	Senior Activity Centres (CAS)	Senior Policy Department at the Municipal Office of Kraków
Latin America and the Caribbean	Chile	Conecta Mayor UC Foundation	Pontificia Universidad Católica de Chile

Overview of cases

To address the research questions, six cases of programmes and initiatives in various institutional and regional contexts were selected to showcase diverse strategies from five UNESCO regions, aimed at critically examining the strategies, modalities and impacts of digital skills programmes targeted at older learners in diverse socio-political contexts. The subsequent sections fully present each case study, following a similar structure. The conclusion synthesizes the findings and provides recommendations to address the grey digital divide by enhancing ICT learning for older adults.

An example of how to address digital exclusion in later life is provided by Chile's Conecta Mayor UC Foundation. Working with municipalities, the initiative provides digital devices and structured learning opportunities to older adults. The programme incorporates a gerontological approach that emphasizes autonomy, social connectedness and self-efficacy. Conecta Mayor's work features the importance of integrating technology access with age-sensitive training and sustained municipal support. Despite infrastructural disparities and challenges in maintaining long-term funding, the initiative stands out for its systemic ambition and alignment with broader social inclusion goals.

South Africa's iGOGO initiative, developed by non-governmental organization (NGO) goGOGOgo, presents a grassroots response to the digital divide by targeting grandmothers in townships and peri-urban areas. The programme links digital skills training with caregiving, community health and intergenerational learning and uses experiential and practical learning formats to reach participants with varying literacy and education levels. Despite limited resources, the initiative has demonstrated a measurable impact in enhancing digital agency and social support among vulnerable older women. Its model underscores the potential of relational pedagogy and local partnerships to advance digital justice.

The United States of America offers a mature civil society-led model through the work of Older Adults Technology Services (OATS) and the American Association of Retired Persons (AARP). Senior Planet, the flagship programme, delivers a wide range of in-person and online classes to older adults nationwide, supported by partnerships with libraries, city governments and senior centres. Its curriculum emphasizes practical digital tools related to technology, health and social engagement, while its learner-centred approach encourages self-confidence, peer learning and positive ageing. Senior Planet's national scope and hybrid delivery design make it an enlightening model for scalable, equity-oriented digital education. Yet challenges remain in securing funding for programmes, complying with regulations, adapting to policy changes, and maintaining community relevance.

In the People's Republic of China, the Shanghai University for the Senior (SUS) exemplifies an integrated model of lifelong learning within a regional initiative aligned with the national policy framework that prioritizes digital literacy and active ageing. Under the Shanghai Open University system, SUS delivers multimodal education to tens of thousands of older learners, combining in-person, online and televised content. Its curriculum is stratified to accommodate learners with different levels of digital proficiency and motivation, and its pedagogical model emphasizes self-directed learning and technological fluency. The extensive institutional infrastructure of SUS' parent university, Shanghai Open University, allows for scalability, while its partnership with Shanghai policies and infrastructures ensures programme alignment with social welfare objectives. SUS illustrates how lifelong learning institutions can play a central role in formalizing and legitimizing digital education for older adults on a large scale.

Poland's Senior Activity Centres (SACs), in the city of Krakow, demonstrate how long-standing municipal investment in senior education can be leveraged to promote digital inclusion. These centres operate as multi-purpose hubs offering access to a diverse range of educational, artistic and physical activities, including digital literacy training and workshops on health, law, foreign languages, photography and other subjects. Their emphasis on community-building and intergenerational learning helps to reduce stigma and motivates older participants. Importantly, SAC initiatives are embedded in local development policies and benefit from stable public funding, ensuring continuity and responsiveness. The Polish experience highlights how local governments can embed digital learning in broad strategies of active ageing and social participation.

The Kingdom of Bahrain provides an example of how state-led initiatives can promote digital inclusion for older adults within a broader framework of social protection and digital modernization. Spearheaded by the Ministry of Social Development, the country's approach integrates digital skills training into community-based social clubs, such as the Abdullah Bin Yousef Fakhr Social Club for Parents, where older adults engage in structured and personalized learning through the Ishraqa Lab initiative. This programme combines individualized support with culturally responsive pedagogy, offering training in essential digital competencies like online communication, e-government services and mobile applications. Challenges persist in ensuring equitable access for individuals with limited formal education or low prior exposure to technology. Still, Bahrain's model demonstrates how sustained institutional involvement and targeted pedagogical strategies can create meaningful digital learning experiences for older adults in diverse social settings.

2. Bridging the grey digital divide: The case of the Conecta Mayor Universidad Católica (UC) Foundation

Uxía Regueira[2]

2.1 Introduction

The Conecta Mayor UC Foundation is a pioneering project in Chile, focused on reducing the digital divide among older adults. The initiative is notable for its innovative approach, which frames the digital divide in educational gerontological terms and delivers solutions through strategic collaborative partnerships with local governments and private companies.

The Foundation was established in 2020 during the COVID-19 pandemic. Public health measures imposed during the crisis, including lockdowns and confinement, exacerbated existing social exclusion experienced by older adults in Chile, and was compounded by the hasty digitalization of everyday processes without adequate infrastructure and training. The project offered a strategic response to older adults' material, social and cultural barriers in accessing and utilizing digital tools. Initially, it provided devices before transitioning to a comprehensive training programme targeting individuals without prior digital skills. This positioned the project as a strategic solution in a context of scarce integrated public policies and a high reliance on local initiatives.

The Foundation's mission consists of three key pillars: digital inclusion as a human right, collaboration with local administrations to ensure broad territorial reach and the implementation of gerontological methodologies tailored to the specific needs of older adults. The Foundation employs a practical educational approach rooted in digital gerontology, prioritizing skills acquisition and fostering older adults' confidence in their capabilities.

Since its implementation, the project has sought to bridge gaps in digital access and usage, transform cultural perceptions of ageing, and empower older adults to participate actively in the social and technological life of the country. This holistic approach makes it a valuable case study for rethinking digital inclusion strategies in the context of rapid demographic ageing and structural inequalities.

This paper summarizes the findings of a case study conducted in two phases: a document analysis and qualitative research through semi-structured interviews. The document analysis examined the political and legislative framework and four institutional documents outlining programmes and impact assessments. The qualitative phase involved five online interviews, each lasting approximately one hour, with key stakeholders: two executives from the Conecta Mayor UC Foundation specializing in social and educational matters, one municipal worker who received training from the institution and implements a dedicated programme in her municipality, and two programme participants. The study explored the initiative's features, achievements, challenges and lessons using an inductive-deductive approach, with a particular emphasis on the former. The subsequent sections detail the results.

2.2 National and local context

The demographic profile of Chile includes an ageing population. This trend accelerated in the 1970s and became more pronounced in the 1990s, positioning Chile among the four countries with the oldest populations in Latin America and the Caribbean (Sequeira, 2024). Over the past two decades, the number of individuals aged 80 and over has grown by 162 per cent (CEPAL, 2019). Approximately 20 per cent of the population is over 60, a figure estimated to rise to about 22.3 per cent by 2027 and 32.1 per cent by 2050, which makes Chile the country with the oldest population in Latin America (CEPAL, 2023). This demographic trend engenders significant risks including limited guarantees for eldercare and a pension system with an individualistic, market-driven design (Soto Pimentel, 2021). The latter has already provoked civic protests in recent years and therefore is widely perceived as a problem. These challenges are compounded by the illiteracy rate, which, while relatively low compared to neighbouring countries, is more pronounced within this segment of the population (OECD, 2019a). Similarly, the concentration of this population in rural areas hinders access to public protection networks, which are concentrated primarily in urban centres and

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are structured around the centralized and extractivist logic of the rural economy, further exacerbating the marginalization of this population (Vecchio, 2022).

This situation is further fuelled by the ageist perceptions of the general public and the self-perceptions within the age group. According to the VI Inclusion and Exclusion Survey (Arnold *et al*., 2021), only 7 per cent of Chileans surveyed reported hearing positive opinions about ageing, while 63 per cent felt that the contributions of older adults were undervalued, identifying the media as passive disseminators of prejudices against this group. This interplay of socio-economic and educational factors and culturally ingrained ageist perceptions regarding the participation and learning potential of older adults intensifies the challenges of digital citizenship.

The 2017 Chilean National Socio-economic Characterization Survey (Ministry of Social Development and Family, 2017) indicated that 70 per cent of people over 60 did not use the internet. Additionally, 67 per cent of those over 70 and 87 per cent of those over 80 lacked access to a smartphone. This digital divide was more pronounced among those with lower education or who lived in rural areas. However, the COVID-19 pandemic transformed this landscape. While the 6th Quality of Life in Older Adults Survey (PUC and Caja-Los Andes, 2023) revealed that only 46 per cent of older adults used smartphones in 2019 (pre-pandemic), this proportion rose to 65 per cent in 2022. If we consider internet access in households where older adults live – and not only whether the older person personally owns or uses an internet-enabled device – 88 per cent of these households have an internet connection, mainly through smartphones, according to the Observatorio del Envejecimiento de Confuturo Report (2024).

Despite this progress, only 38 per cent of older adults reported independently performing online tasks such as sending emails, seeking information or completing procedures. As a consequence, the rapid digitalization of life during the pandemic contributed to the greater social isolation of older adults, impacting their health.

At present, half of the older population in Chile owns a smartphone, but 60 per cent use it only for calls and messaging, while just 23 per cent use it for bureaucratic tasks such as paying property taxes, applying for government benefits or obtaining official certificates (PUC and Caja-Los Andes, 2023; Troncoso *et al*., 2024). However, Chile's Digital Transformation Law (Law 21.180), enacted on 11 November 2019, mandates that bureaucratic processes overseen by state administration bodies must be conducted electronically (Cancino *et al*., 2024). If not accompanied by comprehensive educational interventions, this measure may limit older adults' participation in public life and increase their dependence on others for routine tasks.

In 2017, Chile ratified the Inter-American Convention on Protecting the Human Rights of Older Persons, which includes the right to digital education. While this marked an important commitment, progress in the practical implementation of the convention remains limited. In June 2022, the Senate introduced a bill promoting positive ageing (González-Billault, 2022). Some observers noted that the bill frames the rights outlined in the convention as areas the state should 'promote' rather than guarantee, reflecting a more top-down, welfare-oriented approach to national policy (Milos and Bozanic, 2022).

Currently, three key programmes address the digital divide either directly or indirectly: the Brecha 0 Programme under the Ministry of Transport and Telecommunications, the School Levelling Programme designed specifically for older adults under the Ministry of Education, and the Digital Inclusion Programmes developed by the National Service for Older Adults (SENAMA), an agency under the Ministry of Social Development and Family established in 2002 to promote the effective social and familial integration of older adults (García *et al*., 2024).

The Brecha 0 Programme tackles the first-level digital divide (van Dijk, 2020), which concerns access to the internet and information and communication technology (ICT), by providing connectivity infrastructure and distributing digital devices. However, the programme currently has limited integration with educational institutions, while coordination across stages of digital inclusion could be strengthened. The School Levelling Programme, designed specifically for older adults, focuses on basic literacy and numeracy, aiming to compensate for educational gaps accumulated over the life course. While it does not explicitly prioritize digital training for active citizenship, it may support digital inclusion indirectly by strengthening the foundational skills necessary for using digital tools and engaging with online content. Finally, the Digital Inclusion Programmes, developed by SENAMA, addresses second-level digital divide challenges by developing the skills necessary to navigate digital platforms. These initiatives are often small in scale and could benefit from a more coordinated national implementation strategy. They may not fully address the structural and collective needs required to close the grey digital divide.

In the absence of comprehensive programmes, initiatives addressing social issues may face challenges in securing political accountability or private funding. A notable example is the *¡Vamos Chilenos!* campaign, launched during the pandemic to distribute digital inclusion kits to 80,000 older adults. This campaign laid the foundation for the programme developed by Conecta Mayor in collaboration with local administrations.

In a centralized context with limited resources, municipalities are 'the main communication channel for older adults', as a social worker in a Chilean municipality participating in the case study explained. The Age-Friendly Cities programme of the World Health Organization (WHO) amplified this role, integrating several local governments into a network committed to digital inclusion. In 2015, only five Chilean cities met the WHO parameters for inclusion in this system; however, by 2020, communities or cities in 11 of the country's 16 regions were part of the network (García *et al.*, 2024; WHO, 2022a). Municipalities face various constraints, including limited legislative frameworks and differing levels of financial resources, which can influence their capacity to develop sustainable initiatives.

This context highlights the need for an integrated, holistic national strategy that coordinates resources, educational programmes and public policies to mitigate the digital divide and ensure access for older adults. Such a strategy must delve beyond instrumental usage and consider power dynamics, knowledge-sharing, the intended recipients of technology, and the relationships among users, authorities, educators and learners. Strategic plans must transcend the first-level divide, addressing ageism as a societal construct while attending to this demographic's cognitive and experiential particularities. The Conecta Mayor initiative emerges as a case in point within this context.

2.3 Institutional context

The Conecta Mayor Foundation is a project of Pontificia Universidad Católica de Chile, established in 2020 at the height of the COVID-19 pandemic. Its primary mission is to address the digital divide and foster social inclusion for older adults through digital technologies. The initiative was developed in response to the heightened social isolation experienced by individuals over the age of 75, who were subject to strict home confinement under public health measures limiting organized outings and in-person social contact. Conecta Mayor pursues three key objectives: to design and implement technological solutions that facilitate the integration of older adults, to generate and contribute to national knowledge about older populations, and to promote a cultural shift to reframe ageing and old age.

First stage: Distribution of mobile devices with adapted software

In its initial phase, the foundation collaborated with the *¡Vamos Chilenos!* campaign to undertake a large-scale distribution of mobile phones adapted to the needs of older adults in municipalities interested in participating. The programme targeted individuals aged 70 and over, belonging to the most vulnerable 40 per cent on the Social Household Registry,[3] and living alone or with another dependent person. The selection of beneficiaries was conducted by the implementing parties – the municipalities – which were allocated quotas proportional to the population registered in the Social Household Registry as of August 2020. As one of the executives from the Conecta Mayor Foundation explained, 'We distributed a digital inclusion kit to 80,000 older adults across the country. This kit included a mobile phone with a simplified interface and an application that streamlined the phone's screen. […] Nearly 97 per cent of all municipalities in the country participated in this effort.'

However, monitoring of these devices revealed that even adapted technology was often insufficient. 'After one year, a person with a smartphone didn't know they could swipe the screen to the side,' noted one director. A key challenge is that conventional software is rarely designed to meet the specific needs of older users, such as those with motor difficulties. Yet even adapted versions failed to ensure the seamless integration of devices into daily life. The institution's data support this conclusion: 66 per cent of beneficiaries reported experiencing difficulties or problems in learning to use the device, and 10 per cent said they did not know how to make calls (Conecta Mayor, 2021).

These findings revealed the need for skills development to enable older adults to operate new technologies and improve their confidence. Such a process would also need to counter ageist narratives – prevalent in broader society – influencing what older adults perceive as achievable. These narratives drew on fears among older adults of making mistakes, doubts about their ability to learn new skills and reluctance to adopt unfamiliar tools (Conecta Mayor, n.d.).

As noted by one of the executives responsible for the Conecta Mayor programme, 'Digital inclusion, while requiring a phone, also requires an understanding of what lies behind its use […] It requires the creation of digital training spaces and the development of an educational programme focused on older adults' learning, and must address the prevalent ageism deeply embedded in technology'.

In response to the findings, the Foundation decided to discontinue its device distribution programmes and redirect its efforts toward initiatives that addressed the deeper issues of the digital divide. One of the directors

3 The Social Household Registry (Registro Social de Hogares) is a national system used by the Chilean government to assess and classify households based on a combination of socio-economic indicators, including income, education level, employment status, health conditions, housing quality and access to services. It serves as the primary tool for determining eligibility for social programmes.

emphasized this point: 'We need to complement digital inclusion with digital training. We've distributed the phones, now we need a fully developed programme.'

Second stage: A focus on skills development

In 2023, Conecta Mayor implemented the Digital Empowerment Programme, a pilot initiative funded by the Ministry of Social Development and Family. This programme develops the digital skills of older adults using a methodology rooted in educational gerontology. It targets individuals using a mobile device for the first time, with no prior experience or competence.

This innovative approach has few precedents, but it drew inspiration from Uruguay's *Plan Ibirapitá*,[4] which, while successful to some extent, lacked continuity. According to one of the directors, the Conecta Mayor programme had an interdisciplinary design, involving digital anthropologists, occupational therapists, educators and psycho-gerontologists, alongside academicians from the Pontificia Universidad Católica and Foundation professionals with practical expertise. This collaboration facilitated identification of the proposal's guiding principles and their translation into practical decisions for designing content and activities. The resulting proposal and the educational materials developed by collaborating municipalities underwent a testing phase with actual participants – individuals without prior exposure to accessible digital technologies. These materials were refined based on feedback from the testing process.

The Foundation launched its programme through local governments to ensure the benefits would reach a wide audience without centralizing resources in urban areas near the capital. This approach involved training municipal staff and equipping them with the teaching materials and tools necessary to replicate the training independently. Given their direct contact with older adults and understanding of local conditions, municipalities were identified as key partners. Leveraging existing resources was also seen as essential for territorial expansion and long-term continuity.

Future development: Intermediate-level training

Currently, the Foundation is developing a programme for older adults who already have basic skills in using mobile devices, an initiative much requested by municipalities and participants. Though demand for such advanced training is relatively low compared to the large proportion of older adults who still lack foundational digital skills, its development is crucial for two reasons. First, as previously noted, only 23 per cent of older adults use smartphones for digital administrative tasks, and merely 5 per cent have received any formal training in digital tools (PUC and Caja Los Andes, 2023; Troncoso *et al*., 2024). This means that over three-quarters of the older population remains digitally excluded in functional terms. Second, creating pathways for more advanced learning is essential for ensuring the continuity and progression of those who have already participated in initial training stages. These individuals represent a growing group that, if not offered further challenges and learning opportunities, may disengage from digital participation.

This expansion reflects ongoing demand for tailored solutions to further close the grey digital divide and boost the digital integration of older adults.

2.4 Implementation

Implementation of the programme occurs at two levels (see **Figure 2.1**): (i) design and implementation of training of trainers, and (ii) design and training for older adults by mediators who receive the initial training. This structure is designed with the geographic complexity of the country in mind and, anecdotally, gives rise to a third level in which programme participants transfer what they have learned to other community groups, acting as instructors or mediators for their peers.

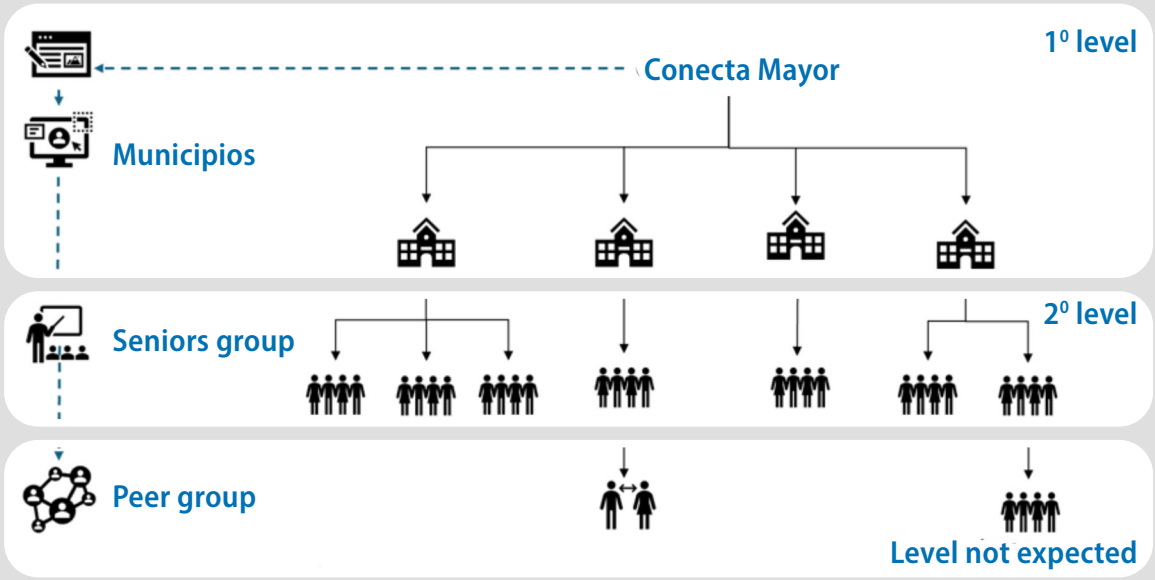
Training for municipal personnel

Initial engagement with municipalities involves awareness campaigns and informational meetings to present the programme's objectives and the importance of digital inclusion. Municipalities previously involved in the mobile distribution campaign are invited to participate and complete a registration form that includes background information, a statement of motivation, a commitment signed by the mayor confirming the availability of internet access and allotted time for training activities, and a computer. This approach ensures active engagement in the training process, which reduces dropout rates. However, it may reinforce existing disparities in rural areas, where limited resources and connectivity challenges remain a significant concern, despite these areas being among those most in need.

Municipal personnel training is conducted via e-learning, asynchronously; that is, instructional sessions and activities are not delivered in real time but rather through pre-recorded videos and digital tools. This approach allows for broader territorial reach and accommodates the participants' professional responsibilities, a critical feature taking into consideration the time and resource constraints expressed by municipal staff. As one staff

3 Plan Ibirapitá is a digital inclusion initiative launched by the Uruguayan government to promote autonomy, social participation and dignity among older adults. It provides age-friendly tablets and, more recently, mobile phones, along with free data and call plans. The programme includes digital literacy training and support spaces, enabling beneficiaries to access online services such as banking and administrative procedures. Initially targeting low-income retirees, it has expanded to include other groups receiving state assistance.

FIGURE 2.1 Implementation strategy



member noted, 'We do everything. We're the ones who sweep, open the doors, put on the show and close up afterward'.

The training content is delivered through lessons accessed via a digital platform. They comprise videos, reading materials and interactive quizzes to assess knowledge acquisition and enable progression to subsequent lessons. While this behaviourist model limits the ability to simulate practical scenarios for case resolution, it ensures controlled task completion through automated assessments, reducing the need for extensive monitoring.

The training emphasizes gerontological education to address the specific needs of older adults. Initial lessons focus on contextualizing the realities of older adults in Chile and the challenges of the grey digital divide. Subsequent modules adopt a hands-on approach, guiding trainers step by step on how to teach older adults to use mobile phones. As the social worker explained, 'We developed seven modules, which were then replicated for training older adults', as teachers or facilitators in the programme.

The project leaders emphasize the importance of the methodology for teaching older adults, which ensures that the educational content reflects this life stage's social, physical and mental characteristics, without falling into potentially limiting stereotypes. For example, trainers are advised against handling participants' devices, encouraging older adults to perform actions themselves. This approach is grounded in real-life scenarios where older adults often express frustration with passive learning. As one director noted, 'Many participants tell us, "My daughter teaches me... but I never learn because she just does it for me." We respond by asking, "How does she teach you?" Usually, they say, "She just grabs the phone, shows me quickly and that's it."'

The training concludes with practical application, requiring participants to engage with a group to implement what they have learned. This stage ensures that the training translates into actionable programmes for older adults rather than serving merely as a summative assessment of skills. Upon completion, the Foundation certifies the participants' learning. While the certification lacks official recognition, it represents a pioneering effort in micro-credentialing.

Training for older adults

Training for older adults is delivered in person in small groups of up to ten participants, ensuring a 1:10 ratio for personalized support in the classroom. Participants are pre-selected based on an initial evaluation where they are asked to perform simple tasks on their mobile devices. Mediators use a rubric developed by the Foundation to observe and score their performance, assigning scores from 0 to 1. Those scoring close to zero on tasks such as locking or turning off the device, making calls or saving contacts constitute the target audience for the training. With a view to addressing the urgent issues of disconnection and isolation, this decision attempts to

narrow the gap between two metaphorical segments of a divide. However, it does not address effective participation in public life and autonomous citizenship, which, by nature, demand a higher level of skills development.

The programme consists of twice-weekly two-hour sessions over a period of seven weeks. Mirroring the trainer training, it applies educational gerontological principles, tailoring the content to the socio-cultural context, cognitive functionality, motor skills, sensory perception and learning mechanisms of older adults. The training emphasizes practice and repetition, adopting a behaviourist approach to reinforce memorizing basic procedures involving gestures (e.g. touching, scrolling) and visual cues (e.g. green for answering calls, red for declining).

The curriculum is structured around specific actions, such as identifying smartphone components, using touch gestures, making and receiving calls, saving contacts, sending WhatsApp messages, understanding mobile data and Wi-Fi, and connecting to the internet. Each lesson is supported by detailed guides provided to municipalities. The guides include text and images illustrating every step necessary to complete tasks. The illustrations can be understood independent of the text, a deliberate strategy aimed at overcoming the literacy challenges prevalent among some older adults.

Lessons are structured to introduce the material, demonstrate the associated actions and facilitate hands-on practice in the classroom. Mediators work individually with each participant, ensuring the simultaneous execution of tasks on their devices. Participants are encouraged to practice at home between sessions, with subsequent sessions dedicated to review and reinforcement.

While the Foundation provides remote support for training implementation, it lacks the resources for in-person evaluation. This has led to discrepancies between the programme's intended methodology and its practical application. For instance, groups often exceed the recommended size of 10 participants due to high demand, sometimes reaching 30, which dilutes the 1:10 teaching model. Nevertheless, municipalities have adapted creatively, developing additional materials such as enlarged mock-ups of screens or keyboards, and tailoring content to group needs.

2.5 Impact and outcomes

The programme was evaluated through various strategies, extracted from secondary documents and the accounts of the two managers. The device distribution phase was assessed in an experimental study with control groups.

However, the phase identified as the core component of the case – the educational training – lacked an evaluative study of comparable scale. Instead, it relied solely on reported learning outcome data and a qualitative study conducted by the United Nations Development Programme (UNDP) in Chile, which included eight semi-structured interviews and a focus group with 11 monitors. In this regard, linking data from the first phase with the testimonies of the second is essential, as this enables the identification of changes attributable to the programme's impact while not evaluating the programme itself.

The students' learning outcomes were assessed in the classroom using the same rubric-based observation method as the initial evaluation. Participants showed significant progress, averaging 77 per cent improvement in digital skills (Troncoso *et al*., 2024). These advancements were evident both in applying the rubric within the classroom, which recreated a real-life scenario, and in the increased use of messaging and calls within the class group and the broader community. This was corroborated by the municipal worker, who noted that implementation of this course improved communication channels within the local administration, including the creation of internal WhatsApp groups in which older adults participated.

Beyond skills acquisition, participants valued the sense of community fostered by the programme among their peer group. In this regard, the programme significantly reduced isolation: 86 per cent of participants reported feeling more accompanied (Conecta Mayor, n.d). They described being able to connect with loved ones, participate in family events while maintaining physical distance – such as attending a granddaughter's graduation via video call (as experienced by the female student) – and even form friendships and support networks within the training.

Participants also reported overcoming the fear of making mistakes, gaining confidence in performing everyday tasks and experiencing greater autonomy. Some 91 per cent of programme participants stated that having access to a device increased their sense of security. A female student exemplified these findings but emphasized the importance of the training course rather than just the mobile device: 'I used to be afraid to go to the mall, but now I can go alone because I know I can always communicate through my phone.'

The programme has contributed to a greater sense of independence among many older adults. However, without a comprehensive strategy coordinated by public authorities, its influence on broader aspects of citizenship – such as urban planning, civic participation frameworks and the development of inclusive social technologies – remains limited, with these areas continuing to present challenges for full inclusion.

The interviewed participants evidenced a positive self-perception of their abilities and the potential to teach others, albeit at varying levels. For instance, a male student shared that he had decided to offer the course to the seniors' group he coordinates in his residential community: 'I use my training materials to make copies and provide information to others', he explained. A female student emulated him and persuaded members of her church group to learn how to use smart devices. This indicates a third level of action that emerges spontaneously through community participation.

2.6 Conclusion

The Conecta Mayor Foundation case demonstrates that digital inclusion for older adults in Chile requires a comprehensive approach beyond merely distributing technological devices. The programme's initial phase, which provided adapted mobile phones, represented significant progress in material access but revealed gaps in the use and appropriation of technology stemming from more profound challenges, such as ageism, cognitive barriers and a lack of educational strategies tailored to the specific needs of this population.

Thus, the Conecta Mayor experience suggests the importance of aligning public policies and programmes such as Brecha 0 with educational expertise, to enhance their effectiveness and sustainability. The subsequent implementation of the skills development programme provided a significant benchmark in addressing the grey digital divide in Chile. The programme focuses on the technical skills necessary to operate mobile devices and fosters cultural change by reimagining ageing and building self-confidence among senior citizens in learning new technologies. By applying educational and digital gerontological principles and seeking strategic collaborations with municipalities, the programme has established a replicable model adaptable to the socio-cultural particularities of different communities.

Conecta Mayor succeeds in establishing a strategy that addresses the centralized organization of the state, making local implementation feasible and sustainable over time. However, this strategy primarily focuses on enabling access and basic use; with more limited support for fostering comprehensive digital citizenship, such as participation on citizen platforms or the independent navigation of everyday bureaucratic processes. Additionally, it only addresses self-perceived ageism rather than all its dimensions, which would require broad societal engagement, including public awareness campaigns, education initiatives and policy measures aimed at challenging ageist stereotypes and promoting intergenerational solidarity.

While the programme has achieved important milestones, it also faces ongoing challenges. At a broader scale, confronting ageism and adhering to equity principles necessitate a holistic action plan beyond training an excluded group to engage in a broader societal model of citizenship that persists in excluding older adults. The programme's experience draws attention to challenges related to sustainable resource allocation, addressing territorial disparities, and enhancing legislative and governmental support. Given the important role of local governments, and the varying availability of trained personnel and financial resources across municipalities, there is a clear benefit to developing a coordinated national strategy. Such an approach could integrate educational programmes, technological infrastructure, and supportive public policies to foster more equitable access to digital tools. The programme's outcomes highlight the positive impact of initiatives of this kind on older adults' quality of life and autonomy. Beyond acquiring technological skills, participants reported increased self-esteem, improved self-perception of their abilities and strengthened social networks. Such digital empowerment mitigates technological exclusion and promotes social and cultural inclusion, encouraging active participation by older adults in contemporary life.

In conclusion, the Conecta Mayor Foundation case demonstrates that addressing the grey digital divide requires a multidimensional approach rooted in cross-sector collaboration, educational innovation and cultural awareness. This model can serve as a reference for other countries facing similar challenges, reaffirming the right of older adults to full and meaningful digital inclusion.

3. 'In wisdom I am strong but in technology I am weak': The role of iGOGO in developing digital literacy and skills among older women in South Africa

María del Pilar García-Chitiva[5] *and Jane Simmonds*[6]

3.1 Introduction

Digital literacy is a prerequisite for the growing population of older adults – those aged 60 years or above – given the pivotal role of technology in communication, education and different aspects of daily life, such as accessing services, managing finances and remaining socially connected. It encompasses skills that enable individuals to think critically, interact effectively, engage in meaningful experiences and collaborate on projects within and across digitally mediated environments (Flamenbaum and George, 2023: 230). Moreover, digital skills training for older adults is a valuable tool for enhancing quality of life while fostering active participation in an increasingly digital society (Pérez, Maciá and López, 2023). In this context, the South African educational initiative goGOGOgo, developed by the non-profit company of the same name, dedicates itself to improving the well-being of grandmothers and the children they raise through a variety of programmes designed to strengthen their digital literacy skills.

Despite the opportunities offered by digital literacy, older adults in South Africa still face a variety of barriers to acquiring this skillset including limited access to digital devices, and internet connectivity and deficiencies in basic literacy skills, such as reading and writing, particularly among populations in high-poverty areas (Garcia *et al*., 2022). To address these challenges, goGOGOgo has made systematic efforts to increase rates of digital literacy, beginning in 2020 at the height of the COVID-19 pandemic, when lockdowns highlighted the urgent need for digital inclusion. Over the past five years, the company has secured donations of over 270 tablets from local telecom companies and has provided digital skills training to over 500 older adults across six South African provinces.

Bridging the grey divide is critical for ensuring the digital inclusion of older adults, particularly those in caregiving roles (Mubarak and Suomi, 2022). This case study examines how the iGOGO programme, a key initiative of NGO goGOGOgo, enhances the digital literacy of grandmothers (*gogos*) in South Africa. Through targeted training, the programme equips older women to use online services for education, banking and healthcare, thereby strengthening their roles within families and communities.

The study employed an exploratory case study approach, drawing on semi-structured interviews and document analysis to understand the programme's implementation and impact. Interviews were conducted with six participants, including the programme director, a coordinator/trainer, two stakeholders and two older adult beneficiaries. In addition, analysis of three reports, three policy documents, two sets of training materials, and four evaluation records provided a comprehensive overview of the programme's objectives, methodologies and outcomes. iGOGO offers a compelling example of how information and communication technology (ICT) initiatives can address the grey digital divide, highlighting important lessons about the potential of digital literacy training to empower older adults, promote social inclusion and enhance quality of life.

3.2 National and local context

Local governments have an explicit mandate to execute municipal services diligently to advance all sectors of society, including older persons, in line with the national Older Persons Act 13 of 2006 and the Policy for Older Persons (Republic of South Africa, 2006). In 2013, the Community Development Directorate of the South African Local Government Association (SALGA) commissioned North-West University to research the provision of services to older persons by local governments. According to Roos and Hoffman (2022), one of SALGA's main objectives is to assist municipalities with policy guidelines for community development. This includes mainstreaming transversal issues about older persons and children, youth, disability, gender, HIV and AIDS, municipal health services, primary health care, disaster management, safety and security.

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The Yabelana ('sharing information') ecosystem in South Africa

As part of its mandate, SALGA implemented two key data collection initiatives to advance digital inclusion for older adults (Roos, 2022). The first of these, iGNiTE (2014), aimed to gather information about the nature and extent of older individuals' mobile phone usage and explore age-inclusive approaches to technological implementation. Building on its findings, the second initiative, we-DELIVER (2017), expanded the focus to examine holistic delivery of services to older adults through ICTs. These data collection initiatives laid the foundation for South Africa's first technological ecosystem, comprising a website, an app and an unstructured supplementary service data (USSD) code[7] Designed as a self-sustaining technology artefact, this ecosystem functions as an eDirectory, providing information about local services and events, primarily for older individuals but accessible to all.

The *Yabelana ecosystem* emerged as a direct outcome of these efforts, paving the way for broader technology adoption throughout South Africa. The Yabelana ecosystem aims to provide older persons and their supporters with easily accessible information encompassing health care and social services and counsellors' contacts and events. Preliminary qualitative data on the Yabelana ecosystem revealed that over 90 per cent of older adults had access to mobile phones, but their use was restricted to making and receiving calls and messages only. A sampling of participants in the above two data collection initiatives highlighted their need to learn other functions from their phones, including those related to sharing and receiving information about relevant events in their local communities.

As the first ecosystem of its kind in South Africa, the Yabelana app and related resources did not train older adults on other mobile-based functionalities such as video phone calls, WhatsApp instant messaging, transportation services, social media or internet-based information search. These functions were subsequently identified by the goGOGOgo team as learning areas of strategic importance for older women involved in the caregiving of children.

Grandmothers as caregivers in South Africa

In South Africa, older women are known locally as *gogos*, a term that translates as 'grandmother'. These *gogos* play a crucial role as primary caregivers for children in households where one or both parents are absent. The absence of parents is influenced by multiple factors, including historical legislation on labour migration, which influenced where adults, particularly men, could live and work, leading many households to rely on extended family networks for childcare. These historic patterns, together with the impacts of the HIV/AIDS epidemic – which increased early mortality among working-age adults – have shaped family structures, resulting in many children growing up without one or both parents.

Hoffman (2022) reports that the HIV/AIDS epidemic in South Africa is among the most severe globally with an estimated 7.5 million people living with the virus in 2020. Legislation enacted between 1948 and 1994 under Apartheid also influenced the geographic mobility of Black, Indian and Coloured citizens,[8] affecting family arrangements and the role of *gogos* in caregiving. Even in the post-Apartheid era, Hoffman (2022) reported that over 3.1 million people aged 60 years and older were recipients of the Old Age Pension in 2015 compared with 2.7 million in 2011. This increase reflects the importance of social grants in a context of economic inequality, with a Gini coefficient of 0.68 in 2015. Within this context, over 2.3 million children are estimated to be raised by grandmothers (Statistics South Africa, 2024), with the Old Age Pension often serving as a valuable source of household income.

For historical reasons, including the legacy of Apartheid policies, Black women in South Africa have traditionally faced marginalization, which has limited their access to educational and economic opportunities. These disadvantages continue to affect opportunities for older adults. Hoffman (2022) notes that funding for education and training provided by government and NGOs often excludes older adults, particularly those from historically disadvantaged groups, due to age limits. Funders may perceive such investment as less likely to yield 'the most productive use of their financial support or investment' (Hoffman, 2022). This perception has particular implications for older Black adults, many of whom experienced severe educational limitations under Apartheid. An example is the 2015 suspension of the Department of Basic Education's 'Kha Ri Gude' adult literacy programme, which had provided reading, writing, numeracy, life skills and basic spoken English instructions to adults who missed out on school. The programme had been especially beneficial for older persons who were previously denied educational opportunities during Apartheid. Its suspension means that older adults, particularly those affected by historic inequities, receive less targeted government support for learning.

7 USSD is a communication protocol used by phones to communicate with a service provider's computer via text messages. This text-driven technology allows end users to interact using a menu selection system that operates in real time.

8 In South Africa, 'Coloured' (Afrikaans: Kleurlinge or Bruinmense) refers to a distinct multiracial ethnic group who have ancestral origins from European settlers, Indigenous Khoisan and Bantu people, and enslaved people imported from the Dutch East Indies (modern-day Indonesia) and India. The term's usage in this context is specific to the historical and social classifications within South Africa and differs significantly from its usage in other parts of the world, such as the United States, where 'colored' is widely considered a derogatory and offensive term for people of African descent.

This situation makes it more challenging to develop programmes addressing persistent educational and economic inequalities among older generations, while also highlighting the importance of inclusive approaches that ensure learning opportunities for all age groups.

Information, communication and technology platforms in South Africa

South Africa has experienced rapid growth in mobile technology, with mobile phones becoming the primary means of communication for older persons (aged over 60). However, a significant digital divide between younger and older populations persists. This divide is perpetuated in part by a prevalent belief bias (or ageism) that older people are less likely to use digital technology due to lack of interest or incapacity (Roos, du Plessis and Hoffman, 2022). This perception often results in a circular dynamic, whereby a lack of tailored support reinforces the assumption of uninterest. Moreover, it has been reported that only a small proportion of older adults actually have access to the internet. This low rate of access is linked to a variety of factors, including lack of infrastructure in rural areas, high cost of devices and mobile data, and, crucially, a lack of training programmes that adequately address the learning styles and needs of older adults, further exacerbated by the aforementioned bias.

According to Gwala and Mawela (2024), although technology can help older adults maintain their independence, many underutilize it. The number of older adults in South Africa that have access to the internet remains low, with some estimates reporting a figure of about 3.6 per cent (Gwala and Mawela, 2024). These limitations have left many gogos with limited digital literacy skills, hindering their participation in digital learning programmes. Given their circumstances – including a history of limited educational opportunities, ongoing economic disparities, their essential but often unsupported role as primary caregivers for grandchildren, and their limited access to modern technology and digital literacy training – gogos often need comprehensive support. This includes assistance related to their education and health, as well as opportunities to generate income for themselves and their grandchildren. For example, in many communities, taboos around discussion of sexuality and sexual health can hinder access to essential health information for gogos and their grandchildren, highlighting the need for educational programmes sensitive to these cultural norms (Simmonds *et al*., 2021).

In this context, international and local organizations have worked to help gogos overcome their limitations and acquire digital skills. For example, global organizations such as UNESCO are involved in efforts to structure and strengthen initiatives that provide lifelong learning opportunities. This aligns with UNESCO's broader recognition of the benefits of lifelong learning for people of all ages (UNESCO, 2023), and their work in Africa often supports such endeavours.

3.3 Institutional context

goGOGOgo was established in Johannesburg in 2020 as a non-profit company. Its role is to enhance digital learning and digital skills among older adults in South Africa, recognizing the societal value of older women in raising children. Through various programmes operating inside communities, goGOGOgo strengthens the well-being of gogos, providing them with knowledge and skills to positively influence the lives of new generations and promote community development, making them practical and influential change agents with digital skills who leverage digital learning through internet-enabled devices. **Table 3.1** summarizes details of where training sessions have been conducted, the corresponding training centres and the number of participants.

The iGOGO project: Mission and vision

The iGOGO project emerged from a goGOGOgo initiative during the 2020 lockdown that encouraged gogos to discuss sexual and reproductive health with their grandchildren (Simmonds *et al*., 2021). Formative qualitative research by the goGOGOgo team showed that the project's success depended largely on the digital literacy of the gogos. The iGOGO programme is thus rooted in goGOGOgo's mission to strengthen the role of grandmothers as agents of change, improving health outcomes, well-being and life opportunities for themselves, the children they raise and their communities.

According to the organization:[9]

> *The iGOGO project aims to enhance the lives of Grandmothers across South Africa with essential digital literacy skills. Through research-based monitoring and evaluation, the project identifies and addresses the specific resources, skills, and knowledge needs of GOGOs to effectively utilize the internet. By equipping GOGOs with basic information and communication technology (ICT) skills, iGOGO empowers them to enhance their quality of life and improve the well-being of the children they are raising.*

9 See https://www.go-gogo-go.org.za/our-projects/igogo (Accessed 1 October 2025)

TABLE 3.1 Distribution of training centres (location, venues), number of courses and participants

Year	Location	Venue	No. courses	No. participants
2021	Alexandra, Johannesburg	Itlhokomeleng Association for Care of the Aged and Disabled (NGO)	3	50
2022	Eersterivier, Cape Town	Apex High School	1	11
2022	Soweto, Johannesburg	Safe-Hub, Jabulani (NGO)	1	13
2022	Diepsloot, Johannesburg	Diepsloot Municipal Community Hall	1	15
2022	Diepsloot, Johannesburg	Africa Tikkun (NGO)	2	30
2022	Fisantville, Cape Town	Usapho (NGO)	1	15
2023	Sheshego, Polokwane	Bokomoso Senior Secondary School	1	25
2023	Kwa Mashu, Durban	Shayamoya Primary School	1	19
2023	Atteridgeville, Pretoria	JJ de Jong Primary School	1	20
2023	Motherwell, Gqeberha	Soqhayisa High School	1	20
2023	Balule Hoedspruit,	Koru Camp/Elephants Alive (NGO)	1	15
2024	Alexandra, Johannesburg	Itlhokomeleng Association for Care of the Aged and Disabled (NGO	1	20
2024	Agincourt, Mpumalanga	MRC/Wits-Agincourt Unit (University)	1	15
2025	Alexandra, Johannesburg	Safe-Hub (NGO)	1	15

Intended outcomes and pilot study

iGOGO was designed by the goGOGOgo team to teach basic digital skills. To this end, in June 2021, goGOGOgo organized an in-person focus group discussion with 10 *gogos* in Alexandra Township, Johannesburg, to determine their level of internet awareness and digital capabilities. This meeting revealed the older women's learning needs, concerns, perceptions and understanding of the importance of developing digital skills and highlighted their lack of digital literacy. The subsequent pilot programme consisted of 20 training sessions for the same core group of 10 *gogos*, which were designed to address their training, knowledge and competency development needs in using ICT applications and tools. To aid this process, the Director of goGOGOgo obtained a permanent donation of 10 tablets from a mobile phone company, which included access to the internet.

The pilot study also revealed that the participating grandmothers were the sole source of income in their homes. In response, the goGOGOgo team decided to teach the group the digital skills necessary to engage in an entrepreneurial activity – in this case, producing and selling shopping totes and fleece blankets. The gogos themselves emphasized their need for training in generating income, particularly through digital means. Throughout the process they also provided continual and specific feedback on the training modules.

3.4 Implementation

Technology adoption

During the initial focus group discussion, the gogos expressed concerns and doubts about digital security, citing their fears of using the internet, including being the victim of frauds and scams, and raised concerns about navigating social networks. In response, the programme adapted to meet these needs, focusing on the safe use of technology, and working to build trust in digital tools. One participant acknowledged the importance of this approach, explaining that 'thanks to this programme, I now can transfer money and send emails'. Another grandmother stated that the training had given her the skills necessary to access relevant information related to government and health services through digital devices and emphasized the benefits of the programme for her community.

The programme made learning relevant and immediately applicable by focusing on practical, everyday activities that require digital technology – such as checking bank balances or assisting grandchildren with school assignments. This context-driven approach significantly enhances information retention, as participants can directly connect their learning to real-life situations.

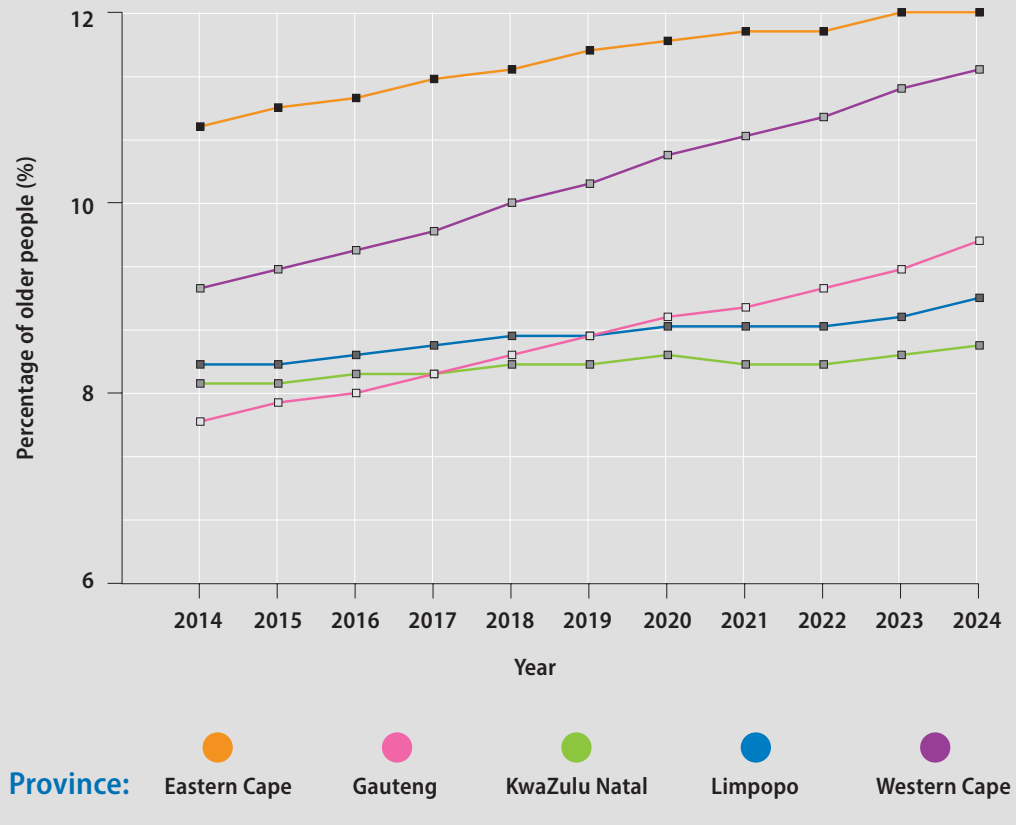
The programme also went beyond merely addressing technical needs; it empowered grandmothers to become active change agents. Indeed, the programme was designed to ensure that the skills learned were retained and disseminated throughout their families and broader social networks, which amplified the impact of the received digital literacy education in the local community.

Geographic reach

Following the initial pilot, the programme grew and in the last four years has trained over 500 grandmothers (and some grandfathers) from Gauteng, Western Cape, Limpopo, KwaZulu Natal and the Eastern Cape. It has also provided each graduate with a digital device to take home on their graduation, thereby promoting internet access in the household. The broad scope of this programme underscores its potential to have a profound impact on the South African population, especially given the percentage increases over the last 10 years among the older population (+60) in all provinces where the programme was delivered (see **Figure 3.1**).

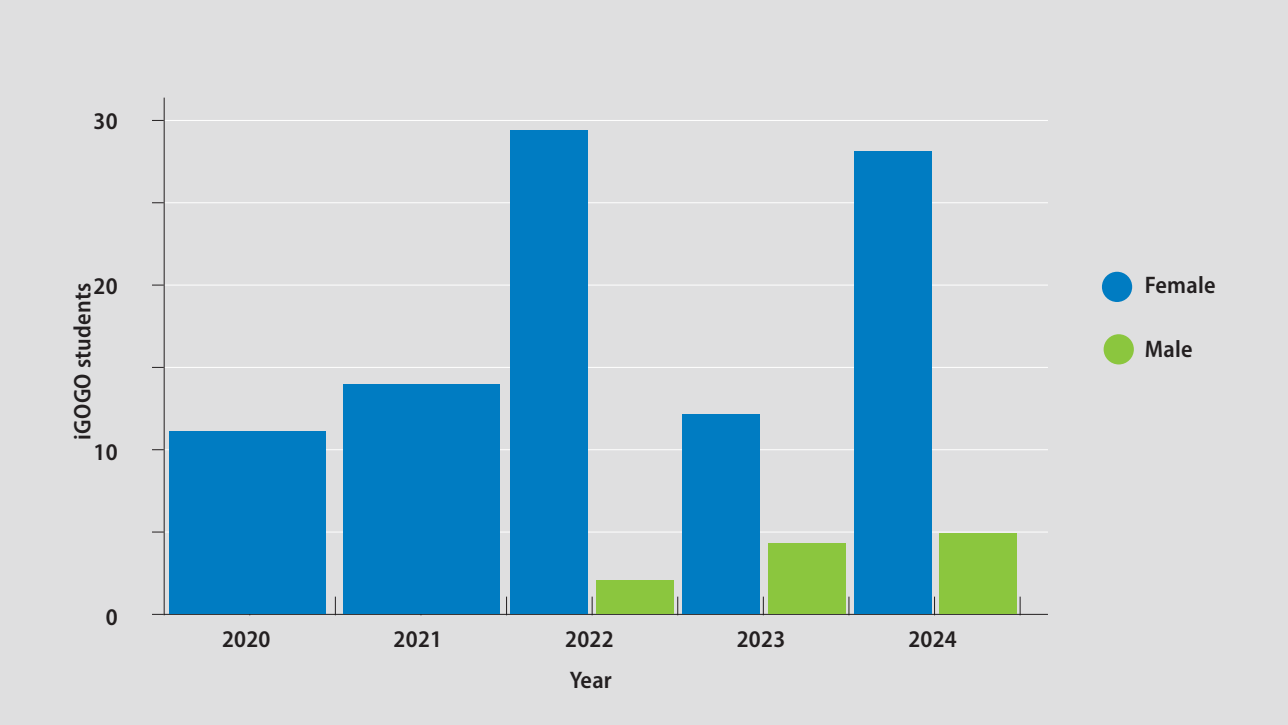
The inclusion of older men in the programme began in 2022, reflecting a commitment to gender equity and inclusion (**Figure 3.2**). This change aims to enhance social cohesion while addressing systemic inequalities more effectively. By integrating older men, the programme reaffirmed its mission to empower individuals regardless of gender, positioning them as active participants in their communities and the digital environment.

FIGURE 3.1 Percentage of older people in provinces where IGOGO training was delivered, 2014–2024



Source: Authors' elaboration based on data from older persons trained by the iGOGO programme, 2014–2024.

FIGURE 3.2 iGOGO programme student distribution, 2020–2024



Source: Authors' elaboration based on data from older persons trained by the iGOGO programme, 2014–2024.

Partnerships and funding

Over the past five years, the iGOGO programme has expanded significantly through strategic partnerships. As noted above, the initiative began with a donation of 10 tablets to support digital literacy following the COVID-19 lockdowns. In 2021, the telecom company Blue Label contributed a further 100 tablets, enabling training for 100 participants between 2021 and 2022. A subsequent partnership with Vumatel, a leading fibre provider in South Africa, added another 20 devises in late 2022. Under the ongoing partnership with Vumatel, 160 participants from six locations were trained in 2023, followed by 30 more in 2024 (including five older men). In 2025, 40 participants is under way with Vumatel funding.

These partnerships have also indirectly benefited over 1,500 children. Each iGOGO graduate receives a digital devise, extending digital inclusion to younger generations and enabling internet access at home. The children's ages ranged from six months to the early twenties, with most being primary school learners aged 6–14 years. Many live in multi-generational households where grandparents are the primary caregivers. By empowering gogos, older men and children with digital tools, the training and device provision have played a vital role in expanding opportunities for families and the wider community.

However, despite these gains, iGOGO continues to face challenges related to funding sustainability, scalability and operational constraints such as limited telecom coverage, Wi-Fi access and training logistics. To address these issues, the programme has strengthened its partnership with Vumatel and established new ties with community policing forums to support safety for both participants and staff.

Programme curriculum

As explained above, iGOGO's programme curriculum consists of a series of 20 sessions, which focus on practical activities with tablets, emphasizing mobile applications and safe and secure web browsing. Each session includes detailed instructions and exercises which reinforce specific digital skills, in particular using WhatsApp, managing emails, setting calendar reminders and engaging in online shopping. The training sequence consists of seven stages: basics of using tablets and mobile phones, the internet and messaging, security awareness, app interaction, communication skills, digital services and graduation (see Figure 3.3). The lessons also emphasize internet safety, include participation in video calls and webinars via Zoom, as well as the secure use of e-hailing platforms like Bolt for individuals in areas with ride solicitation services. The programme concludes with a graduation session that recognizes participants as 'iGOGOs' equipped to apply their new skills in daily life and support their communities.

iGOGO programme sessions.
© T. Radebe/UNESCO.

FIGURE 3.2 iGOGO programme content curriculum

- **Basics of using tablets and mobile phones:** Learn how to use tablets (basic management, storage of contacts, scheduling calendar reminders).
- **Internet and messaging:** Learn how to access and browse the internet and send messages (including use of WhatsApp and SMS).
- **Security awareness:** Internet safety learning and tips.
- **App interaction:** Learn how to download apps and use services like YouTube and Google Maps
- **Communication skills:** Learn how to use WhatsApp options such as messages, calls and video calls. Understand how to create an email and send and receive messages.
- **Digital services:** Learn how to use digital applications (e.g. Bolt)
- **Graduations:** Occurs once older adults have successfully completed all 20 sessions.

Source: Authors' elaboration based on data from older persons trained by the iGOGO programme, 2014–2024.

Delivery methods: Practical and age-inclusive learning formats

iGOGO emphasizes experiential, practical learning. Each eligible participant must be an adult aged 55 or older and are the primary caregiver responsible for raising children. Gogo students start by learning the basics – how to turn on a tablet or phone and swipe – and gradually accumulate a solid understanding of how to use online applications and services. The programme functions on an open access basis to promote engagement and operates a non-discriminatory policy regarding past employment status.

In terms of delivery, iGOGO employs a user-centred, face-to-face model focused on practical learning. The 20 sessions are conducted in small groups of 20 to 35 participants. Each session is supported by two to three facilitators, with a ratio of roughly one facilitator to ten participants. This ensures personalized attention, accommodates differences in digital proficiency and supports effective learning across varying literacy levels. Trainers are chosen for their patience, ICT expertise and cultural understanding – qualities essential to ensuring a safe, respectful learning environment for older learners.

Regular community engagement is central to iGOGO's approach. The programme promotes the use of digital tools like WhatsApp and e-hailing services to enhance gogos' social interaction and their ability to support their grandchildren. By positioning gogos as active contributors in online communities, the programme challenges age-based stereotypes and combats age discrimination. Beyond digital empowerment, iGOGO fosters social connection – enabling these older caregivers to play an active role in their grandchildren's education, encouraging intergenerational knowledge exchange, strengthening family bonds and ultimately improving long-term outcomes for both generations. This comprehensive support system directly helps to navigate the challenges arising from the absence of children's fathers and mothers, ensuring that children still receive essential care and guidance.

iGOGO programme sessions.
© T. Radebe/UNESCO.

3.5 Overall impact

To understand the programme's level of impact across different dimensions, in-depth interviews were conducted online with six key members of the iGOGO programme. These participants included two gogo students, the programme director, the programme coordinator (who also acts as a trainer), a designer who contributed to the programme's initial structure and development, and the founder of Vumatel, the telecommunications company that provides connectivity support to the programme.

Learners' voices

Participants responded in positive terms when asked about the programme's practical value. One *gogo* student explained that iGOGO educates participants on how to access the Facebook marketplace to sell products, benefit from social support services and learning and employment opportunities and use banking platforms. A second student stated that enrolment was straightforward; she simply had to respond positively to the question, 'There is a learning programme for gogos. Can you come?' She emphasized the transformative impacts of iGOGO, specifically the encouragement it offers to older adults to learn and improve their lives. The programme provides transportation, breakfast and lunch during the course, which boosts attendance and the programme's success, as many older persons have only limited access to funds.

Both interviewees agreed that the training was inclusive and adapted to their learning pace. They found it easier to understand and interact with the material through group work, face-to-face interactions and practical experience. The facility to ask questions during group sessions was helpful according to one of the interviewed students, who noted that the instruction focused mainly on internet access. The other *gogo* student learned to use various apps on her phone and also received one of the tablets donated by Vumatel. '[The training] was face-to-face', she explained. 'just like in a class'.

Stakeholder perspectives

According to the programme director, 'What is unique about this programme, compared to other digital learning initiatives for older people, is its focus on the grandchildren. While iGOGO teaches the gogos how to use the internet, its purpose is not solely to empower them for the workplace – as these are retired or unemployed women. Instead, it aims to empower *gogos* to access services and learning opportunities for children in their household, enabling them to better support the grandchildren they are raising.'

According to the programme coordinator, iGOGO is tailored to the needs of the older population in the region. The training is delivered face-to-face, one-on-one, and is personalized to accommodate the learning requirements of older adults. It includes practical sessions where participants learn to use tablets themselves. 'It's face-to-face', the programme coordinator explains. 'The participants arrive at the venue at 8:00 in the morning, and we teach them in person. We chose to use tablets because we know from experience that they work best.'

The programme designer considers the methodology underpinning iGOGO to be progressive, as it adapts to the needs of older adults, covering everything from learning how to turn on the tablet to managing communication on social networks and navigating online information. 'We start with simple tasks first, like turning on the tablet to ensure the participants grasp the basics'.

The programme director believes that iGOGO impacts older adults in positive and significant ways, enabling them to assist their grandchildren with schoolwork and access a variety of services. Additionally, it enhances their social interactions and boosts their sense of self-sufficiency. 'It gives them a sense of their power and importance', the director explained.

The coordinator emphasizes that giving older people tablets and the skills to use the technology is empowering. The programme also encourages physical activity and explains to the participants how to access health information: 'We teach them how to research health-related topics, for example, by looking up symptoms of medical conditions.'

The founder believes the programme's practical and accessible methodology promotes inclusion: 'The learning is intergenerational. Each learner has the ICT skills they acquired from the training, as well as a device in the household.' This allows them to further develop their skills and access information they need.

Both the founder and designer noted that while the intergenerational impact of the programme helps older caregivers support their grandchildren's education and development, it also enhances family bonds.

3.6 Limitations

While both learners and the stakeholders see the promise of initiatives such as iGOGO, notably in terms of intergenerational learning, older adults' autonomy and agency building, and educational outcomes of younger generations, some limitations hinder the programme's implementation. Chief among these is lack of access to digital devices, exacerbated by low literacy rates among older adults. The programme's stakeholders – the founder, director, coordinator and designers – consistently noted that older adults often arrive with little to no experience of using modern technology. Due to historical and economic exclusion, gogos – particularly those from vulnerable communities – have had limited opportunities to learn about digital tools or to access them (beyond basic mobile phones) at home, in school or in the workplace.

These challenges were echoed by *gogos* themselves. As one participant, employed in silk screening, explained, 'My work does not involve technology at all, only manual labour.' Another noted that she had never been exposed to digital tools either at school or at work and had found it difficult to learn how to use them 'at [her] age'.

In future iterations, the team behind the programme plans to take a deeper dive into the theory of change to identify possible ways to mitigate the issue of low access to the internet and low levels of digital literacy. This will be accompanied by an ongoing campaign targeting donors to help ensure a sustainable flow of material and financial resources.

3.7 Conclusion

The iGOGO programme's digital empowerment of South African grandmothers demonstrates that technology – when approached intentionally – can serve as a powerful enabler for older adults historically excluded from the digital landscape. It also demonstrates how technology can reinforce intergenerational learning. As gogos become more digitally fluent, they are able to interact more with their grandchildren, support their education and earn their respect – bridging not only the digital divide but also the generational one. The programme enables grandmothers to assist their grandchildren with homework and research, promoting collaboration and learning. Furthermore, it equips grandmothers with the skills to help their grandchildren use educational devices and tools. The programme also highlights the value of older individuals within the family and gives them a meaningful role in their grandchildren's educational journeys (Roos and Hoffman, 2022).

Chief among the many key takeaways from this case study is the importance of strengthening access to connectivity via strategic partnerships. In the case of iGOGO, collaborations with telecom providers, corporate donors and community organizations have helped to overcome structural barriers to connectivity, thus enabling gogos and their families to engage meaningfully with digital tools. Local businesses and technology providers can also be roped in via corporate social responsibility initiatives, and policy-makers should continue to advocate for subsidized internet services for older adults.

Additionally, the case study demonstrates that to be successful, digital literacy programmes aimed at older adults must be user-centred and closely aligned with real-life applications. Programmes that offer face-to-face learning opportunities with flexible scheduling can enhance engagement and help older learners build confidence in using digital tools independently. Training should focus on practical, hands-on learning that directly connects to participants' everyday lives.

The iGOGO experience further highlights the need for robust financial models. Sustainable digital inclusion requires more than enthusiasm – it demands stable funding streams, infrastructure investment and continual evaluation. Monitoring outcomes has allowed the programme to adapt to technological shifts and evolving learner needs, keeping the training relevant and impactful over time.

Most importantly, iGOGO reframes older adults not as passive beneficiaries but as active digital participants. With the right support, they can engage with complex digital tasks, contributing to their communities and shaping a more inclusive society. Digital inclusion is not just a matter of equity – it is a necessity for social progress. iGOGO represents a compelling case for investing in programmes that challenge age-based stereotypes and affirm that the future of digital transformation must include – and be influenced by – older women. This case shows how older women help sustain positive outcomes while taking part in a wider partnership effort.

4. Thriving in the digital age with the flagship programme Senior Planet: OATS from the AARP, United States of America

Olivia Hernandez-Pozas[10]

4.1 Introduction

In the United States, as elsewhere, a gap exists between older adults (individuals aged 65 and older) and younger populations regarding access to and the use of digital technologies. This gap is known as the grey digital divide (UIL, 2024b). Addressing the grey digital divide is crucial to ensuring older adults are not left behind in an increasingly digital world. Recognizing the importance of reducing this digital divide, Older Adults Technology Services (OATS) from the American Association of Retired Persons (AARP) launched a joint flagship programme, Senior Planet (OATS, 2025a).

AARP is the nation's largest non-profit, non-partisan organization dedicated to empowering Americans aged 50 and above to choose how they live as they age (AARP, 2021). OATS is a social impact organization affiliated with AARP, dedicated to achieving this goal through technology. Together, they provide older adults with the tools and training necessary to leverage today's technology to enrich their lives (OATS, 2024a). This qualitative research study highlights the key challenges and good practices they experienced in enhancing digital inclusion among older adults.

In the United States, older adults are among the fastest-growing demographic groups (NCOA, 2024). Since 2012, their numbers have surged by 34 per cent (equivalent to 14.7 million individuals), surpassing the mere 2 per cent increase seen in the population under the age of 65. In 2022, there were 57.8 million Americans aged 65 and older, comprising 31.9 million women and 25.9 million men (ACL, 2024). Projections indicate that by 2040, older adults will constitute 22 per cent of the population (ibid.). With longer life expectancies, improved health and a growing trend of working beyond traditional retirement, Americans are experiencing significant changes in their working lives (Abraham and Houseman, 2020).

This study was informed by 14 in-person interviews conducted in San Antonio, Texas, and online via Zoom from 21 to 28 October 2024. Interviewees included the following members of OATS from AARP: the Executive Director and founder, the director of Education, the National Licensing Programme Manager, the South Regional Manager, the Programme Lead from San Antonio and two trainers. Interviews with a Digital Inclusion Coordinator from a partner organization and six older learners enriched the gathered data. Older learners included four women enrolled in a lecture course and two men enrolled in a workshop course. Their participation was voluntary in response to an invitation extended by the trainer to the whole group. The case also includes a review of public policies in the United States, demographic research, academic papers, OATS from AARP reports, articles and online information.

4.2 National and local context

Addressing the grey digital divide requires ongoing support from policy-makers to ensure older adults can fully participate in a technology-driven society. In the United States, the development of digital literacy among older adults is influenced by national, regional and local policies.

At the federal level, the US Department of Education funds a range of digital literacy programmes. Studies have found that Americans who are older, historically underserved, less formally educated, from lower-income backgrounds and living in rural areas have lower rates of digital skills, technology access and broadband service adoption (Council of Economic Advisers, 2015).

These disparities risk excluding individuals from accessing essential information and services and can limit their community engagement (Hecker, Spaulding and Kuehn, 2021). In response, policy measures such as the American Rescue Plan Act (ARPA) and the Infrastructure Investment and Jobs Act (IIJA), both enacted in 2021 in the context of the COVID-19 pandemic, provided funding for broadband infrastructure, technology education and connectivity

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support (Saunders and Chin, 2024). Together, the ARPA and IIJA have improved the landscape of marginalized groups by expanding access to essential services.

The Federal Communications Commission (FCC) officially replaced the Emergency Broadband Benefit (EBB) programme with the Affordable Connectivity Program (ACP) in 2021, continuing its mission to ensure affordable internet access for individuals and communities in need (FCC, 2024a). This programme, which lasted three years, was discontinued in 2024 (ibid.) due to a lack of additional funding from Congress (FCC, 2024b).

Additional initiatives include the National Telecommunications and Information Administration (NTIA), which runs the Broadband Equity, Access and Deployment (BEAD) Program (NTIA, 2024). Its funding is dedicated to planning, infrastructure deployment and adoption. The latest NTIA internet use survey reveals older adults are increasingly using the internet (i.e. a 4.2 per cent increase in internet use among older adults, representing approximately 550,000 additional users), yet continued support remains necessary (OATS, 2024i). The Senior Community Service Employment Program (SCSEP), administered by the US Department of Labor, distinguishes itself as the only federally funded programme specifically designed for older workers (CWI, 2024). Digital literacy training is not its primary focus but is included within its remit.

At the state and local levels, policy efforts are highly variable. Some jurisdictions have developed Digital Equity Plans through dedicated digital equity offices (DEOs), guided by the Digital Equity Act, which emphasizes inclusive access to skills and technology for marginalised populations, including older adults (Tomer and Fishbane, 2020). Grants from institutions such as the Institute of Museum and Library Services (IMLS) can also be leveraged for programmes targeting older learners (IMLS, 2025).

In an interview, the Executive Director and founder of OATS from AARP revealed that in the United States, there is no one national programme providing digital skills training for all; instead, various entities offer such programmes. For instance, the federal government makes available initiatives through the Administration for Community Living, which provides funding and programmatic frameworks to help older adults maintain their independence and quality of life, including technology training. Likewise, individual state governments have State Offices for the Aging, and every municipality or county has a dedicated office to support older adults. In this decentralized environment, non-profit organizations play a central role – providing more than half of digital inclusion services for older adults – and often rely on competitive grants and diverse funding sources.

Although progress has been made to close the grey digital divide through public policy-making in the United States, several barriers remain. These include a lack of coordinated federal, regional and local policy actions, a shortage in long-term funding for enhanced connectivity and digital literacy training for older adults, employment discrimination, undersupply of user-friendly designs to ensure inclusion and safe digital environments. Addressing these issues will be critical for advancing digital inclusion and equity among the ageing population.

4.3 Institutional context

OATS is a non-profit organization founded in 2004 by Thomas Kamber, a leading expert on ageing and technology, with the help of a group of dedicated volunteers (OATS, 2024b). It offers free training programmes to help older adults acquire the digital skills and literacy they need through their flagship programme, Senior Planet. The mission of OATS is 'to harness the power of technology to change the way we age' (ibid.).

Today, OATS operates four dedicated centres across the United States, with over 480 licensed partners in more than 36 states, enabling it to serve diverse communities and reflect the broad demographic spectrum of older adults nationwide (OATS, 2024h). Its broad operational footprint indicates significant national reach and a well-established partnership network. In 2024, over 600,000 participants attended Senior Planet classes (OATS, 2025b).

History

OATS started in Brooklyn, New York, and soon expanded throughout New York City (OATS, 2024b). In 2013, OATS opened the Senior Planet Center, a technology-themed community centre for older adults, located in Manhattan. In 2015, OATS expanded to Plattsburgh, New York, this time with a focus on rural ageing and technology. Furthermore, OATS was able to partner with sponsors in Maryland, Florida and California. In 2018, the Senior Planet initiative expanded into Texas and Colorado. In 2023, OATS opened a new Senior Planet Center in Miami (OATS, 2024b). As of 2025, OATS has promoted its concept of 'aging with attitude', highlighting its mission to empower older adults through technology.

The Executive Director of OATS explained during an interview that affiliating with AARP in 2021 enabled OATS to pursue its mission at scale while also being able to access new sources of funding and services. In exchange, OATS provides AARP with updated technology programmes specially designed for older adults, in line with AARP's guidelines and regulations.

In response to the COVID-19 pandemic and subsequent lockdowns, OATS adapted its Senior Planet curriculum to allow participants to attend online instead of in person. This transition created an opportunity to reach a new, larger audience with new content. Since 2021, older adults have been able to access the online version of Senior Planet through AARP's Virtual Community Center (AARP, 2021).

Partnerships and funding

Partnerships

OATS' Licensing Program amplifies its impact through collaboration, enabling the organization to form alliances with licensed partners and funders. According to the National Licensing Programme Manager, it was created in 2021 to allow OATS to positively impact more older adults. She added that through this programme, OATS collaborates with other non-profit organizations that share its mission of serving older adults and possess the necessary resources to help operate the programme, such as technology, classroom space and staffing. However, before entering into a partnership, the prospective partner must first establish a community need for Senior Planet.

All licensed partners are non-profit organizations or government agencies and encompass a range from small and local to larger groups. For instance, OATS collaborates with small libraries, senior centres, entire network library systems, counties. and cities. It also partners with Area Agencies on Aging (AAA), publicly funded community-based agencies that coordinate senior services in large geographic areas. Such partnering enables OATS to achieve scalability and nationwide relevance. OATS also holds monthly meetings with its partners aimed to promote community engagement and provide professional development opportunities.

Funding

Like most non-profit US organizations, OATS must rely on financial support from various sources, including government funding, diverse grants, additional funding from philanthropic sources, and supplementary resources from individuals or client contributions. OATS utilizes these sources of funding to operate and achieve shared goals with funders (e.g. training older adults in specific communities on certain technologies) and to make Senior Planet programmes accessible to the public at no charge. The Executive Director of OATS from AARP explained that most funding sources provide support for a few years and then cease, necessitating a new round of financing. These varied sources provide OATS with a combination of funds to develop programmes, information on how to implement them more effectively in a specific community, and access to certain communities to deploy the programmes.

However, this cycle of dependency on short-term funding can create operational, financial and strategic challenges, making it hard to ensure long-term sustainability.

OATS' funders include government sources such as the New York State Office for the Aging, Montgomery County, the City of San Antonio and the County of Santa Clara, among others. OATS has also received grants from various foundations and corporate sponsors (OATS, 2024d).

4.4 Strengths and challenges

Because trends in philanthropy evolve and national economic downturns reduce funders' contributions, OATS must compete for resources to secure consistent financial support. Additionally, the organization must comply with tax regulations and adapt to new federal and state policies. Public trust and accountability are therefore key for OATS, with funders expecting transparency and requiring detailed reporting. To navigate these challenges, OATS leverages several internal strengths: the strategic oversight of its board of directors (a list of board members can be found at OATS, 2024f), the institutional support provided by AARP, the guidance of its leadership team, and the professional commitment of its staff, trainers and volunteers (see OATS 2024e). Longstanding collaboration with a wide network of partners further enhances its capacity to respond to emerging needs and maintain programme relevance.

4.5 Implementation

This section looks at the ways in which OATS empowers older adults through its Senior Planet programmes, encompassing extensive countrywide coverage through licensed partners, in-person centres and AARP's Virtual Community Center. It also explores OATS' focus on robust curriculum development, inclusivity measures, multiple state-of-the-art topics and careful training of trainers.

Communication and outreach

Senior Planet communicates with older adults through licensed partners, a dedicated website where people can sign up for weekly newsletters and in-person programmes at four learning centres. Senior Planet also offers a free hotline staffed by technology trainers, who can answer tech questions related to the courses over the phone.

According to the National Licensing Programme Manager, interested organizations and government agencies interested in signing a licensing partnership agreement should meet specific criteria – being a non-profit, sharing OATS mission of serving older adults, possessing the necessary resources and having established a community need for Senior Planet. The National Licensing Programme Manager supervises the selection process based on submitted applications. Once approved, licensed partners sign a one-year agreement with OATS, but do not pay any membership fee. However, OATS requests that partners report data and enter their schedules into the system so programmes and attendees can be visited and tracked. At the end of the first year, partners have the option to re-sign for an additional year.

Senior Planet courses are available in both in-person and online formats, depending on the content. In-person classes are delivered at Senior Planet centres or partner sites (OATS, 2024g). Online courses are offered through AARP's Virtual Community Center. Older adults who prioritize social connections and live close to the facilities can choose in-person courses. In contrast, those with mobility restrictions or who are busier, have better internet access and are more technologically savvy can choose online courses. Most older adults can choose either format on different occasions. This strategy of providing courses through multiple formats has enabled OATS to reach older adults more often and more efficiently, using the least possible resources.

Curriculum development

The Director of Education emphasized that Senior Planet courses are developed in-house based on four key elements. The first of these is *participant insights.* OATS trainers, programme leads, regional managers and the AARP's salesforce collect data through surveys, roundtables and interviews, which is then entered into robust data systems and tools managed by the OATS team for Impact, Measurement and Learning. The second element is OATS' *expertise and constructive attitude towards ageing and technology.* OATS is convinced that older adults are capable of learning and utilizing digital tools in their everyday lives. The third vital design element is s*olid pedagogy for older adults* (i.e. andragogy), emphasizing personalized, structured digital training. Much attention is paid to pacing, repetition, avoiding ageist language, cultural proficiency and observing learning styles. The fourth element relates to the unique qualities of older adults. Design must consider what older adults bring to the experience and reflect an understanding of their current life circumstances. Thus, frequent internal meetings are held between the curriculum team, regional managers and the national licensing team to ensure relevance for their communities and to keep them updated on practical topics and methodologies.

Senior Planet's curriculum reflects elements of a learner-centred and needs-based approach. The programme systematically collects feedback through surveys, interviews and roundtables to ensure that course content reflects the motivations of older adults, including learning for knowledge, practical tasks and personal engagement. The programme adopts a flexible, multi-format delivery approach, enabling self-paced learning and the use of hands-on activities, which may support the development of digital competencies. Senior Planet has four types of course delivery: lectures, workshops, five-week courses and multi-session series (OATS, 2024g). Matching content to format is a deliberate instructional strategy. While lectures are informative and aim to pique the interest of older adults in new tools, the objective of workshops is to enable them to use these tools effectively. When topics are complex and require more practice, OATS offers five-week courses or multi-session series. These multiple formats enable OATS and partner organizations to identify older adults who are more likely to complete specific courses while also allowing them to choose the topics they prefer to study. **Table 4.1** provides a detailed description of each delivery format.

TABLE 4.1 Delivery formats employed by Senior Planet

Delivery format	Description
Lectures	Lectures introduce technical topics and themes concisely, explaining the general purpose of a concept, device or platform, describing its usefulness and introducing essential tips and tricks. Lectures do not offer hands-on exposure to the presented topic. Each lecture lasts 60–75 minutes and can accommodate up to 75 participants per session. There are no prerequisites for lectures, and participants do not need access to devices.
Workshops	Workshops offer hands-on activities led by a trainer. Participants receive a multi-page, step-by-step handout for each workshop, which typically lasts 75–90 minutes and has a maximum capacity of 20 participants. Most workshops have no specific prerequisites, but some require participants to have an email address.
Five-week courses	Courses meet twice a week for five weeks, with each session lasting 75 minutes. Class sessions combine discussion of new topics with hands-on, practical application of technology skills. OATS provides a detailed, printed course book for each participant to keep after completing the course.
Multi-session series	Multi-session series combine one-off lectures with hands-on workshops. A multi-session series typically meets twice a week for the number of weeks specified in the description. Participants should register for the entire series, as they would for a course, and all sessions last 75 minutes to ensure continuity. Participants receive handouts for each session. The series has a capacity limit of 20 participants.

Source: AARP Foundation, Digital Skills @50+ and OATS, 2024.

4.6 Inclusivity measures

Although older adults in the United States share many similar characteristics, they also present salient differences. Older adults vary in their physical and cognitive abilities, work and retirement status, level of social engagement, financial situation, cultural perspectives and health needs. Thus, flexibility in course delivery is a significant factor in accommodating Senior Planet programmes to the different needs of older adults across the country. For example, some Senior Planet classes are available not only in English but also in Spanish, Chinese, Haitian Creole, Vietnamese and Russian (OATS, 2024k). The programme's flexibility allows OATS to address the needs of a range of communities, including those identified by the Council of Economic Advisers (2015) as being more vulnerable or marginalized.

Multiple topics

Lectures, workshops, five-week courses and multi-session series offered by Senior Planet cover more than 270 different topics. Lectures focus on introductions to technology, providing lists of online resources and demonstrating tools. Their short duration enables OATS to update the Senior Planet programme's offering of topics quickly, keeping lectures relevant for older learners. This format also allows OATS to collect information about participants' interest in certain topics and decide which new lectures and workshops to offer based on their usefulness. Some subjects are provided as workshops because they require practice and coaching (e.g. 'Getting Started with PayPal'). Short workshops are beneficial for beginners who are unfamiliar with using a certain tool. They require minimal time and effort and encourage older adults to test the technology. Committed older learners are more likely to proceed with five-week courses and multi-session series. Matching the delivery format with the topic is a critical factor in successful training.

TABLE 4.2 Delivery types and a sample of topics offered by Senior Planet

Delivery format	Sample of topics
Lectures	Google Maps, P2P (Peer-to-Peer) Payments, Introduction to Translation Tools, Telemedicine, Introduction to Managing Your Privacy, Mobile Health Apps, Cloud Storage
Workshops	Finding Information Online, Getting Started with LinkedIn, Getting Started with Zoom, Networking on LinkedIn, Staying Safe Online, Using Job Search Engines, Getting Started with the iPhone Health App.
Five-week courses	Android Essentials, Chrome Essentials, Computer Essentials, iPad Essentials
Multi-session series	Creating Your LinkedIn Profile, Practising with Google Docs, Using Google Workspace Tools, Video Conferencing for Remote Work.

Source: AARP Foundation, Digital Skills @50+ and OATS, 2024.

Emerging technologies, such as Artificial Intelligence (AI), are currently being incorporated into the catalogue of offerings, made possible by the recent reception of a US $450,000 grant from the Societal Resilience Fund, a joint initiative launched by Microsoft and OpenAI to further AI education and literacy (OATS, 2024j). As AI rapidly transforms daily life, lifelong learning for older adults on this topic will become increasingly important (UIL, 2024a). **Table 4.2** provides a sample of topics offered by Senior Planet.

4.7 Train the trainers

According to the South Regional Manager, Senior Planet believes that trainers are key to making the learning experience relevant to participants (Senior Planet, 2024), in particular, in terms of diversity in background, age and language used when training older adults, among other elements. Having such a diverse teaching team helps students from varied backgrounds feel both represented and valued.

The National Licensing Programme Manager explained that OATS has more than 800 administrators and trainers, most of whom are part of partner organizations. Once a partner is accepted onto the free programme, prospective trainers complete a five-week train-the-trainer course provided by OATS. Partners also have access to almost all of the Senior Planet curriculum and receive all the materials needed for the trainers to teach classes. The materials include a guide that provides explicit recommendations on how to effectively start a class, utilize analogies to illustrate concepts, and employ questions and answers to enhance audience engagement and encourage active participation. As one trainer pointed out, the guide also stipulates the order in which the content should be taught and includes helpful additional resources. He also emphasized the importance of connecting new sessions with previous ones to help older adults recall information they had already learned. The primary aim of Senior Planet programmes is to build practical skills, confidence and independence rather than to obtain formal credentials. There is also an emphasis on verifying that participants fully understand the material, including by giving homework and checking in with students during sessions. As a Digital Inclusion Coordinator at a licensed partner site explained, trainers are careful not to impose stress on older learners and instead work to develop trust. Active listening is also considered crucial, as older adults both want to learn and be heard (OATS, 2024h).

4.8 Impact

Senior Planet classes seek to positively influence older adults in five areas: financial security, social engagement, creative expression, health and wellness, and civic participation (OATS, 2024g). These five areas were selected based on OATS' extensive research on ageing, technology adoption and digital inclusion, as well as insights gathered from participants through surveys, focus groups, interviews, and the experiences of OATS and its partners in teaching. Through better training on technology in these five areas, older adults can make

TABLE 4.3 Descriptions of targeted impact areas in Senior Planet classes

Impact area	Description
Financial security	Empowering older adults at all income levels to leverage digital financial tools to shop, bank, save money and take control of their finances.
Social engagement	Combating isolation among older adults, connecting them with friends and family members, and helping them stay active in their communities.
Creative expression	Expressing creativity digitally, while incorporating new platforms and fun ideas into the process.
Health and wellness	Helping older adults take better control of their health while introducing stretching, cardio and resistance exercises.
Civic participation	Staying engaged in civic life, combating ageism and raising their voices through digital advocacy.

Source: OATS, 2024g

informed choices about what is best for them, resulting in increased independence, autonomy and quality of life. **Table 4.3** provides descriptions of these targeted impact areas.

The South Regional Manager and the Programme Lead both affirmed that they had witnessed the positive benefits of these programmes on the mental and physical health of older adults. They noted that Senior Planet participants reported increased self-confidence, stronger connections with family members and improved follow-up with medical appointments. Additionally, as their social engagement grew, many experienced a reduction in social isolation, as well as diminished fear and anxiety related to technology use. These priorities remain central to current approaches (UIL, 2024b).

During the interview conducted as part of this study, a group of older female learners attending a lecture explained that their primary motivations were to be able to discuss technology with their grandchildren and understand what they were saying. One of them commented 'I intend to continue because I know that even a little bit, even a little nugget will help me down the line. Especially because I have grandkids that are like "that's easy"…'. Another female learner in this group said she was driven to help other older adults in the family who had not attended the course. These students appreciated the trainers' anecdotes and personal experiences because they mirrored experiences of their own. One of the students commented 'The instructor was very easy to understand… You can ask him questions. He was very knowledgeable, and I enjoyed him as an instructor…'. Another student pointed out: 'I really appreciate that the instructor has been showing, that I can see, and they [the trainers] are not just telling me, because I am a visual person, so seeing it visual wise helps me to get a grip on it'. Students also emphasized the importance for them of being safe and protected when shopping or engaging in online activities, such as watching videos or playing games. A female older learner said 'I took the class because I want to learn more about my phone. I like playing with my phone'. Another noted that learning helps her mind remain alert, adding 'the more you learn, the more you retain and share with others'.

Two older male learners appreciated the opportunity to practise with computers during workshops. Their motivations to complete the programme included being able to search for information online about places that interested them. One older male learner, reflecting on his reasons to learn, stated '… to get information that I need that is in the computer… if I am looking for a city or a town… it will show me'. The other student added 'in my case… how to control the computer'. They found the course book easy to follow and applauded the way their trainer taught and answered their questions. One of the students, regarding the booklet, commented 'the way is written is easy to understand' and regarding the trainer, the student said 'little by little, she is teaching us what apps to use…'. He added 'I appreciate… the chance to learn… She [the trainer] is taking her time to explain us… to make us understand… She listens to everybody'. Barriers they mentioned included perceptions about their ability – and that of other older male adults – to utilize

technology, which were rooted in subjective beliefs about their competency rather than actual acquired digital skills (Peiffer *et al.,* 2020). One of the students explained 'I told a friend of mine, you should come… but some people do not come… because they think the course is difficult, and I tell them, no it is not difficult… some are embarrassed they do not know…'.

In 2023, Senior Planet reported significant engagement through both in-person and virtual programmes, including 79,512 in-person licensing programme engagements and 501,414 virtual programme engagements. According to data from OATS (2024c), participants reported a range of perceived benefits: 70 per cent felt more confident connecting socially online, 75 per cent felt better equipped to find resources, 67 per cent felt less alone and 78 per cent felt more connected to the world. The programme also received a net promoter score, which measures customer loyalty, of 88 per cent.

4.9 Conclusion

OATS is an example of a non-profit organization that, through its programmes, provides free technology training and positively impacts the communities it serves. Throughout the years, OATS has faced numerous challenges in sustaining its impact, including securing funding, complying with regulations, adapting to policy changes, maintaining public trust and maintaining community relevance. Balancing these challenges demands strategic planning, resilience and commitment to mission-driven work. It also requires a focus on the older adult segment of the population, attention to curriculum development, training of trainers, collaboration with partners and making informed decisions about delivery formats and topics.

The impact of digital literacy programmes on older adults extends beyond technical skills; they foster increased self-confidence and social engagement and enhance cognitive engagement and mental well-being (Bakshi and Bhattacharyya, 2021). Participants in the present study emphasized the importance of acquiring digital skills to communicate with younger generations, particularly their grandchildren, highlighting intergenerational communication as a key driver of technology adoption among older adults (Peiffer e*t al.,* 2020).

Older adults often struggle with self-efficacy in digital environments (Peiffer *et al*., 2020). Findings from this study suggest that hands-on practice in a supportive learning environment can mitigate these concerns. For instance, participants in this study reported that the ability to practice with computers in the workshop contributed significantly to their confidence, reinforcing the relevance of digital competency in enhancing older adults' proficiency and persistence in using technology (Malodia *et al.*, 2023). However, some barriers identified in earlier research remain evident. Despite structured instruction and explicit course materials, some older adults still struggle with pre-existing beliefs about their technological capabilities. While instructional clarity is indispensable (Bakshi and Bhattacharyya, 2021), addressing psychological barriers through confidence-building strategies is equally essential (Peiffer *et al.*, 2020).

Today, Americans live longer, have better health and work beyond traditional retirement. However, the challenges posed by the COVID-19 pandemic and rapid technological advancements have made some American older adults more vulnerable and have even led to financial hardships. When older adults lack updated digital skills, it becomes more difficult for them to find employment, and they also become at risk of disconnection from essential provisions, such as access to information, services and community engagement. Given the often fragmented and episodic nature of digital training provision, this case underlines the need for coordinated, sustained efforts to promote digital inclusion. Senior Planet provides valuable insights into how such programming can be designed and scaled to meet the evolving needs of an ageing population.

5. Senior Activity Centres: Addressing the digital exclusion of older adults in Krakow, Poland

Maria Łuszczyńska[11]

5.1 Introduction

Digital competencies, basic literacy and numeracy are fundamental skills for modern individuals, enabling them to function effectively in a technology-driven society. Proficiency in these areas transcends age, gender and location, and must include older adults.

This study examines Senior Activity Centres (SACs) in Krakow, institutions that offer digital skills training to older individuals as part of broader initiatives aimed at enhancing their social participation and quality of life. Senior Activity Centres provide a diverse range of educational, artistic and physical activities, including digital literacy training – encompassing computer, internet and mobile phone use – and workshops focused on health, law, foreign languages, photography and many other subjects. The primary goal of these activities is to prevent social exclusion among older adults and promote active ageing. Operated by non-governmental organizations (NGOs) and funded by local governments, these centres represent a stable, long-term investment in the social activation of senior citizens.

Krakow, Poland's second-largest city, has 53 SACs, with plans underway for a further five by the end of 2024. Serving over 200,000 residents aged 60 and above, these centres exemplify effective collaboration among local governments, NGOs and seniors with a focus on digital education. Unlike other more temporary projects, Krakow's approach integrates digital literacy as a core component of senior activation, aligned with European and national active ageing policies.

Senior Activity Centres provide inclusive, non-formal education that caters to diverse social groups who are at risk of digital exclusion. The flexible approach employed supports older learners in the acquisition of various digital competencies, underpinned by a humanistic psychology approach (Rogers, 1969) and lifelong learning principles (Florin, Hedlund and Åkerblom, 2020; OECD, 2001). The initiative is a response to demographic shifts in Poland and Western Europe, resulting in ageing populations, and the consequent need to enhance the social capital of this group.

To examine SACs in Krakow, the case study employed interview questionnaires supplied by the study coordinators. Both these questionnaires and the associated consent form for participation in the research were translated into Polish. The research findings were derived from analyses of five interviews with older adults aged 71–84 – three women and two men – one interview with the coordinator for senior initiatives of Krakow City Office, and six conversations with six SAC coordinators. The study was carried out between October and November 2024.

5.2 National and local context

According to Statistics Poland (GUS), the population of older adults aged 60 and above in Poland was 9,936,087 in mid-2024, with women accounting for over 58 per cent of this group. This demographic represents 26.5 per cent of the total Polish population, a proportion that continues to grow steadily (GUS, 2024b).

Demographic projections for Poland, aligned with the United Nations' *Recommendations on Communicating Population Projections* (UN, 2018), present a main scenario (medium growth) and two alternative scenarios (high growth and low growth), all of which anticipate a significant rise in the population aged 65 and older from 2022 to 2060 (GUS, 2023a). The most pronounced increase (high-growth scenario) foresees 50 per cent growth followed by the medium scenario with a 37 per cent rise in the population and the low scenario with a 22 per cent increase. A slight decline in the size of this age group is forecast toward the end of the projection period: under the low-growth scenario, this decline is estimated to occur over the final six years, resulting in a reduction of approximately 110,000 individuals, while the high-growth scenario predicts a decrease in the final year of about 20,000 persons.

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Quantitatively, the main scenario (medium growth) projects that the population aged 65 and older will reach 8.19 million by 2030 and 10.07 million by 2060, representing approximately 40 per cent of Poland's population by that time. Additionally, a substantial increase in the number of individuals aged 85 and older is anticipated. Between 2022 and 2060, this group is expected to grow by 83 per cent under the low-growth scenario and nearly 300 per cent under the high-growth scenario (GUS 2023a).

The working-age population is expected to contract significantly in parallel with this demographic shift. Forecasts indicate a reduction ranging from 25 per cent under the low-growth scenario to 40 per cent under the high-growth scenario by 2060. This transition will result in a marked rise in the demographic dependency ratio, defined as the number of non-working-age individuals relative to those of working age. In 2022, there were 70 non-working-age individuals (0–17 and 60+/65+) for every 100 working-age individuals (women aged 18–59, men aged 18–64). By 2060, this ratio is projected to increase to 105 for every 100 under the high-growth scenario (GUS, 2023a).

In 2023, 93.3 per cent of Polish households had internet access (GUS, 2023b), and age-related digital exclusion in social life did not appear to be driven by overt ageism. However, Eurostat data highlight significant challenges in Poland regarding digital exclusion among older adults. In 2023, approximately 56 per cent of the population, or around 14.5 million individuals, lacked basic digital skills. Among those aged 55–74, this figure was nearly 82 per cent, affecting approximately 7.2 million individuals, compared to an average of 63 per cent across European Union countries. Thus, older adults represented almost half of all individuals in Poland who lacked essential digital competencies. Moreover, the most significant demographic among those who had never used the internet was adults aged 60–74, totalling nearly 2 million individuals (1,991,700), accounting for over 75 per cent of all people in Poland without internet access (Eurostat, 2023).

In 2024, Statistics Poland (GUS, 2024b) reported that 48.8 per cent of individuals aged 16–74 possessed basic or above digital skills, representing a 4.5 percentage point increase compared to the previous year. During the same period, 95.9 per cent of households had internet access, representing a 2.6 percentage point increase over the prior year. Access to the internet via fixed broadband connections rose by 2.6 percentage points, while access via mobile broadband increased by 2.2 percentage points year-over-year (ibid.).

In 2024, 61 per cent of individuals aged 16–74 reported using public administration services online within the previous 12 months. The adoption of e-government services was notably higher among urban residents, which account for 59.8 per cent of the country's population (GUS, 2024a), with usage exceeding that of rural residents by 16.4 percentage points. The most frequently performed activities on public administration websites or applications included submitting tax declarations, searching for information, downloading or printing official forms, and receiving official correspondence or documents through personal accounts on these platforms.

An analysis of digital skills across age groups revealed that the highest levels of basic or above-basic digital competencies were found among individuals aged 16–24 (73.5 per cent) and 25–34 (72.1 per cent). In contrast, the lowest percentage was observed among individuals aged 65–74, with only 13.7 per cent demonstrating basic or above-basic digital skills (Eurostat, 2023; GUS, 2024c).

Two studies stand out for their diagnostic examination of digital engagement among older adults: *How Do Older Adults Use Technology? On Effective Digital Education Practices*, authored by the educational team of the Central Technology Hub (Polish Development Fund Foundation, 2021) and *Technology in the Service of Society: Will Poles Become a Society 5.0?*, published by the Digital Poland Foundation (2024). Analyses of the data revealed pronounced generational disparities, particularly in the adoption and use of digital technologies and the Internet. Among older adults, the studies identified a persistently low level of digital proficiency, with 37 per cent of older respondents reported finding the use of digital technologies and the internet excessively complex. These findings underscore the importance of tailoring digital education and communication strategies to meet the diverse needs of various age groups.

However, while older adults often perceive technology as overly complicated, they also recognize its potential benefits, for instance, demonstrating greater openness to specific innovations than younger respondents, such as wearable health monitoring devices and robotic surgical technologies. Less enthusiasm was exhibited for other applications, such as online shopping and self-service retail solutions. Interestingly, even within the older demographic, there was considerable interest in specific advanced technologies, including AI-powered license plate scanning and the utilization of nuclear energy, highlighting the nuanced and evolving attitudes of this group toward technological advancements.

The Polish government, in line with the European Union's social development priorities, has developed strategic frameworks to enhance digital competencies and promote digital education among older adults. One key document is Social Policy for Older Persons 2030: Security – Participation – Solidarity, adopted in 2018. This document addresses digital education as a critical component in combating social exclusion, including the digital marginalization of older adults. It outlines a comprehensive approach to social policy for older people, aiming to strengthen their social integration

and safety by encouraging active participation in society, promoting health and security, and fostering intergenerational solidarity (Council of Ministers, 2018).

In 2023, the Polish government introduced the *Digital Competence Development Programme* (Council of Ministers, 2023), which seeks to elevate digital skill levels nationwide. The programme emphasizes inclusivity, aiming to provide all citizens with opportunities to develop digital skills tailored to their individual needs. Among its core objectives is the advancement of digital competencies for marginalized groups, such as individuals with disabilities, those with low digital literacy and older adults, who are specifically identified as a priority demographic.

An earlier initiative, the *Broad Coalition for the Development of Digital Skills,* was established in 2013 to inspire and coordinate efforts towards universal digital education (Polish-American Freedom Foundation, n.d.). The coalition is an informal network of institutions, organizations and companies committed to fostering digital skills, adapting to technological advancements and promoting digital inclusion. Initiated by the Minister of Administration and Digitalization and the Leader of Digitalization in Poland, the coalition comprises representatives from the government, local administration, businesses, NGOs and the media. With over 100 signatories, the coalition aims to harmonize existing initiatives, inspire new projects and disseminate good practices across diverse sectors. By raising awareness about the opportunities and challenges of digitalization, it works to enhance digital participation and ensure equitable access to digital tools and education for people in all life stages and professional activities (ibid).

Both regional and local governments have adopted policies reflecting these strategic priorities. As of mid-2024, the Lesser Poland Voivodeship[12] region had a population of over 3.4 million, with more than 836,000 individuals aged 60 and older, who accounted for 24 per cent of the region's population. Over 204,000 older adults lived in Krakow (GUS, 2024a). The Lesser Poland Voivodeship's *Silver Lesser Poland Programme* (Urząd Marszałkowski Województwa Małopolskiego, 2023) addresses digital inclusion within the broader context of social activation for older adults. Key initiatives include:

- conducting surveys on the digital competencies of older adults in the region;
- launching the *Lesser Poland Senior Online* project, an open competition to implement public initiatives supporting older adults;
- offering *Senior-Animator* training programmes, which combine digital skills education with crisis intervention strategies for community leaders and animators working with older adults;
- implementing the Safe Senior project to enhance safety awareness among older residents.

Additionally, the programme incorporates the development of a virtual cultural heritage database aimed at improving older adults' access to cultural and educational resources, such as the MERKURY e-learning platform,[13] while concurrently building their digital competencies.

At the municipal level, Krakow exemplifies the localization of such strategies through the *Municipal Programme for Social Activity and Integration of Older Adults (PASIOS)*. Developed in five-year cycles, the current iteration (2021–2025) includes targeted measures to address digital exclusion among older adults (PASIOS, 2021). These efforts reflect a comprehensive, multi-level approach to fostering digital inclusion, enabling older adults to participate more fully in modern societal and cultural contexts.

The consequences of digital exclusion are profound, often diminishing the quality of life by restricting seniors' independence and limiting access to essential services such as healthcare. Efforts to mitigate digital exclusion have included projects like Adult Social Inclusion in a Digital Environment (ASIDE), designed to foster digital skills among older adults through inclusive education. Similarly, information, communication technology (ICT) training programmes aim to support older individuals in maintaining professional engagement and enhancing their daily lives. Initiatives such as Poland's Online Patient Account, a government-run digital platform that allows patients to access their medical records, prescriptions, appointments and health information online, underscore the advantages of digital inclusion but also highlight the risks of exclusion for older adults who cannot utilize such technologies (Gródek-Szostak *et al*., 2022).

Addressing digital exclusion among this demographic requires a comprehensive approach that combines improved access to technology, targeted digital literacy programmes, and strategies to overcome psychological and economic barriers. Effective solutions demand coordinated efforts and strategic support from public governance bodies to establish an inclusive ecosystem

12 A *voivodeship* is an administrative division unit in Poland, constituting a higher level in the administrative hierarchy. There are 16 voivodeships in Poland, which perform managerial functions in areas such as public administration, economy, education, healthcare and other sectors. Each voivodeship has its own authorities – the voivodeship marshal and the voivodeship assembly – which make decisions at the regional level. *Voivodeships* are further subdivided into smaller units, namely counties (*powiats*), which are in turn divided into municipalities (*gminas*).

13 The MERKURY e-learning platform provides access to a simulator for four self-service devices: parking meters, parcel lockers, self-check-out machines and ATMs.

that facilitates digital participation and improves the overall quality of life for older adults (Adamczyk and Betlej, 2021; Frączkiewicz-Wronka, Zrałek and Ostrowska, 2023; Tomczyk *et al*., 2020, 2023).

5.3 Institutional context

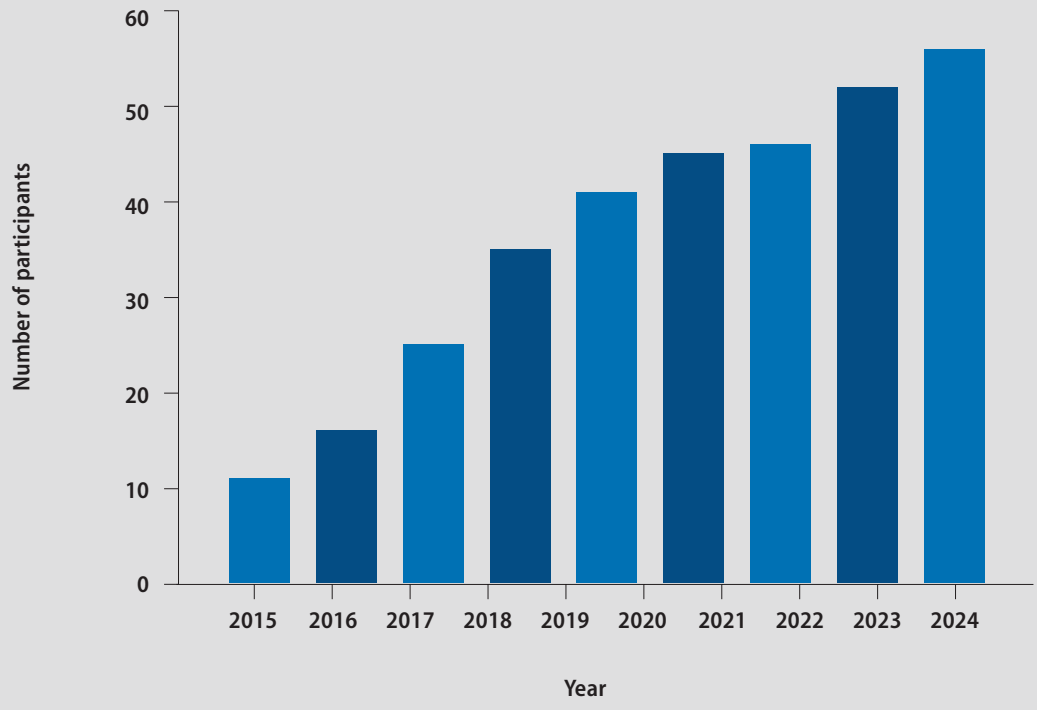
Krakow is divided into 18 districts, with the number of SACs per district varying from one to five. The distribution of SACs is influenced by the size of the older adult population, the district's geographical dimensions and the willingness of NGOs to provide services in the area.

In the past, older residents of Krakow complained about the lack of educational and integrative spaces in their immediate living environment. In response to these concerns, the city decided in 2015 to fund the establishment of the first SAC. In the first year of operation, 11 centres served 830 older adults. The SAC facilities were designed to engage older adults, foster their social integration, and promote healthy and active ageing. Senior Activity Centres were included in subsequent editions of the PASIOS programme as a priority area in terms of network development, organization and funding. Over the last 10 years, the number of SACs has increased from 11 to 53 facilities. **Figure 5.1** provides a detailed breakdown of the number of SACs in Krakow by year.

The dynamic increase in the number of SACs over the past decade has triggered a substantial rise in municipal expenditures allocated to this type of activity, while simultaneously intensifying the mobilization of NGOs to provide adequate infrastructures (e.g. premises, internet access, equipment and educational resources, including trainers and programme developers). This process has been driven by greater engagement and integration within the civic and social sectors, specifically dedicated to supporting older adults.

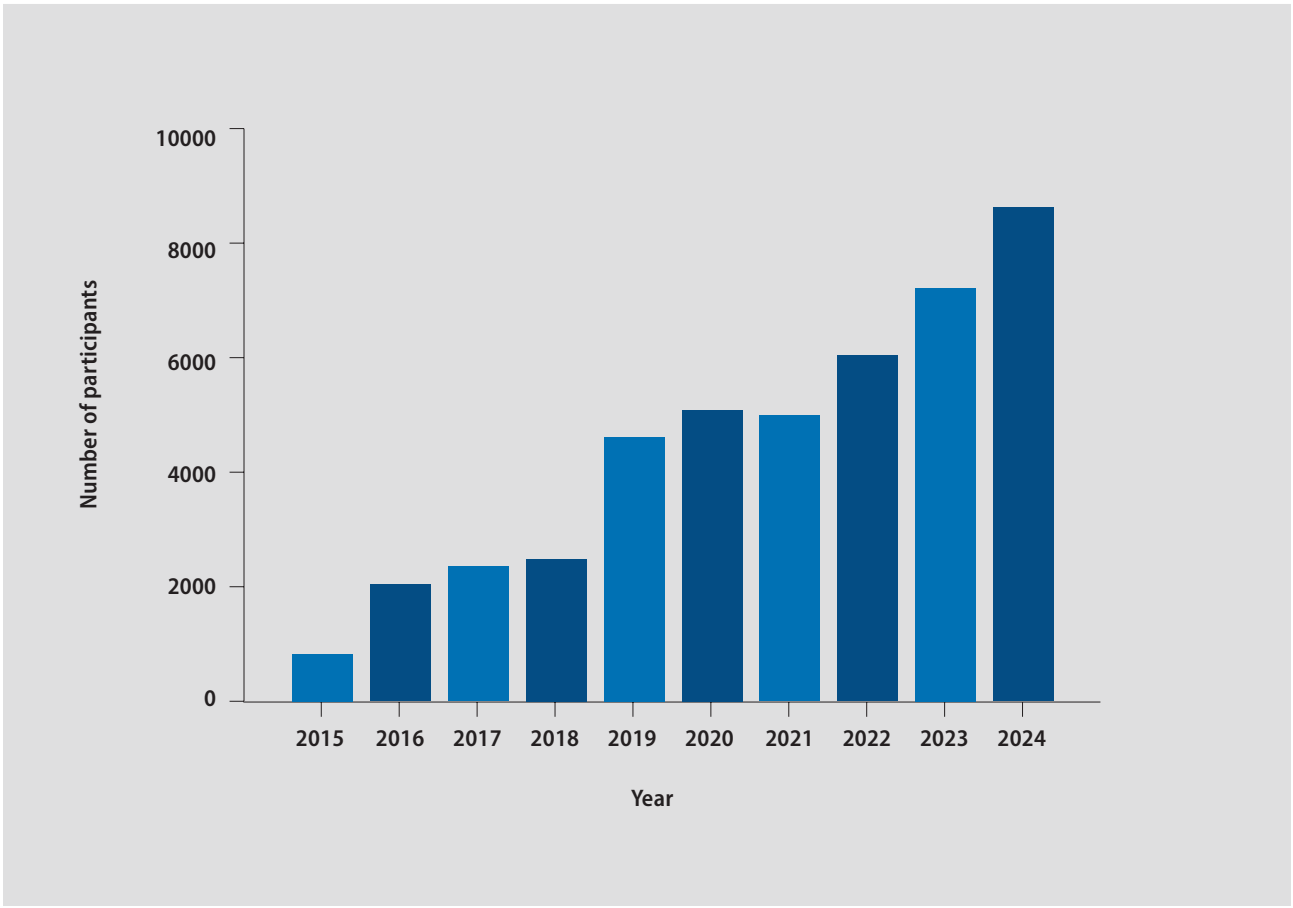
Such unique mobilization of resources was a response to the unmet needs of older adults, which catalysed the significant expansion of educational and activation services tailored to Krakow's older population. In Poland, generally, each city pursues an autonomous local policy strategy, employs its method of data monitoring and

FIGURE 5.1 Number of SACs in Krakow, 2015–2024



Source: Own compilation based on data received from Krakow City Office

FIGURE 5.2 Number of older adults using SACs, 2015–2024



Source: Own compilation based on data received from Krakow City Office

provides a city-specific range of services for older adults. However, despite the current lack of comprehensive data on municipal expenditures for services to older adults, the development in Krakow represents a distinctive phenomenon compared to other Polish cities.

Since 2015, the number of older adults using SAC services in Krakow has increased steadily (see **Figure 5.2**). The increase in financial resources allocated by the Krakow City Office for SAC activities has been equally dynamic. Figure 5.3 shows the scope of financial resources allocated to SAC activities from 2015 to 2023 in PLN (Polish currency).[14] It should be emphasized that the invested funds have increased 25 times since 2015 according to the annual UMK data collected for this case study.

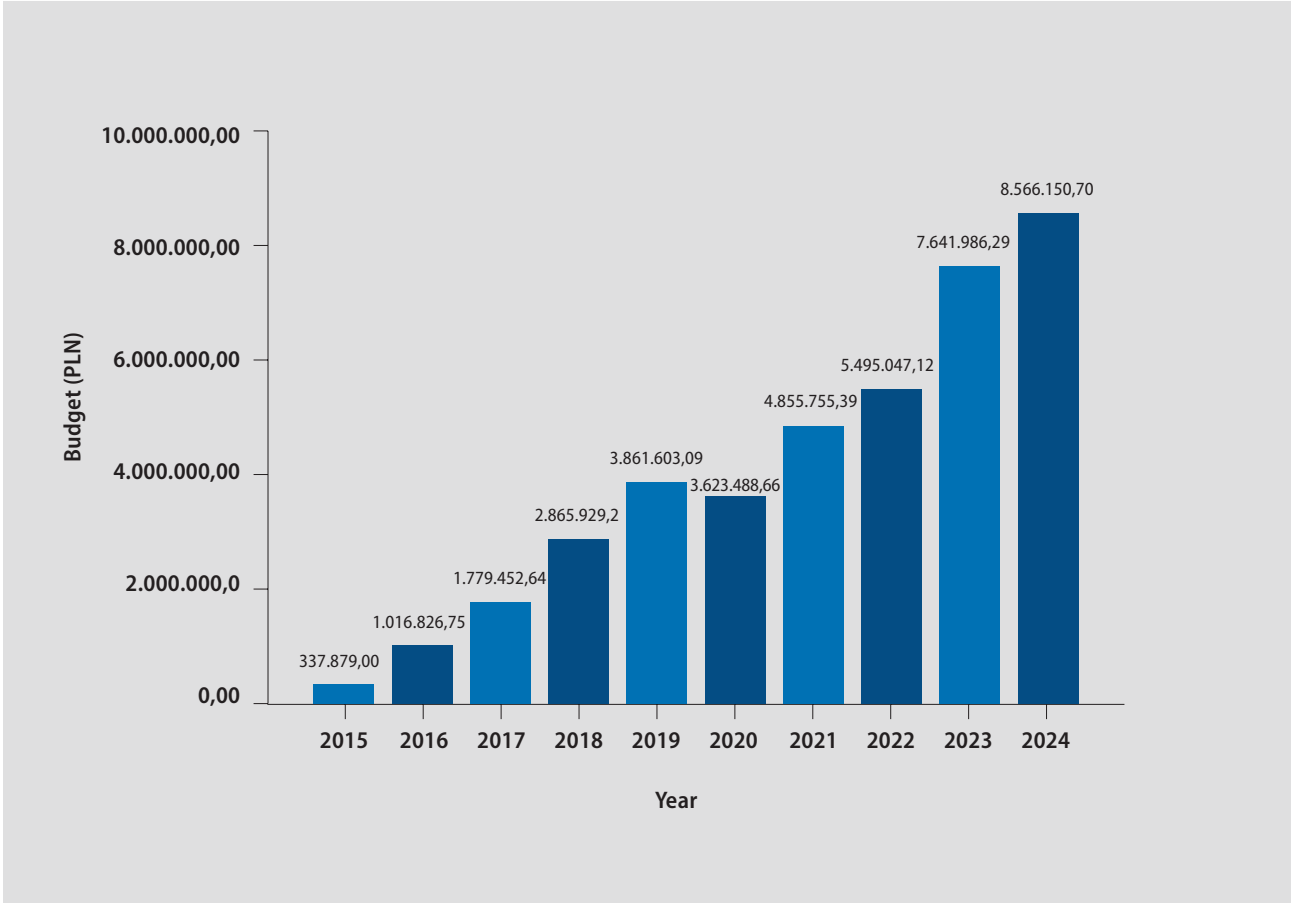
In the autumn of 2024, the city of Krakow had 53 SACs, with plans to increase to 58 by the end of the year. The distribution and location of the individual SAC centres is strategically designed to ensure that all older adult residents of Krakow can access services near their homes. However, there is no zoning restriction; older adults are free to choose and engage in activities at any SAC centre, regardless of its location, and may enrol in courses offered at multiple centres. By 2024, more than 8,600 older adults in Krakow were utilizing the services provided by SAC centres.

5.4 Implementation

A critical aspect of the SAC model is the mandatory inclusion of digital literacy courses for older adults, which is a prerequisite for securing financial resources from UMK within given grants. A significant portion of older adults aged 65 to 75 are proficient in navigating the internet and using modern technologies. However, they are often reluctant to adopt new technological solutions, not necessarily due to cognitive limitations but rather due to fear, uncertainty or a lack of confidence (Szmigielska, Bąk and Hołda, 2012; Wieprzkowicz, 2011). Despite their concerns and limitations, such individuals participate in SAC activities. The solutions implemented by such

14 To convert amounts to EUR, use the average exchange rate of 1 EUR = 4.30 PLN.

FIGURE 5.3 Expenditures on SAC activities, 2015–2024



Source: Own compilation based on data received from Krakow City Office

programmes must directly enhance the quality of life for older adults, particularly those who are excluded or at risk of exclusion, and have, therefore, been designed using a bottom-up approach, involving local community representatives familiar with the specific social challenges faced by seniors. As a result, all digital education activities are grounded in experiential learning, wherein older adults engage in hands-on training to boost their confidence and digital competencies in public spaces.

The need for digital education is frequently assessed through consultative meetings with older adults and NGOs. These meetings are held when planning new editions of PASIOS, during which older adults have the opportunity to articulate their technological needs, which the organizers then address.

In addition to combating digital exclusion, the education initiatives launched by public institutions such as Krakow City Office aim to strengthen their social potential of older adults and create safe environments where they can function effectively in public and social spheres. Research respondents, including representatives from funding institutions and digital education providers, noted the essential role of digital participation in maintaining uninterrupted social connections, whether with family, friends, fellow SAC participants or other educational institutions, as became particularly apparent during the COVID-19 pandemic. Older adults themselves reported that improving their digital competencies provided a sense of security and competency in performing tasks such as using e-kiosks, shopping online, using self-service checkout systems, purchasing tickets for public transportation and trains online, and sending parcels via parcel lockers.

Secondary motivations mentioned by both public and non-governmental sector representatives relate to requirements outlined in strategic global, European, national and regional documents.

Key factors supporting the successful implementation of digital skills programmes for older adults include:

- proximity to the participants' places of residence;
- architectural and communicational accessibility to the education venues;
- curricular flexibility;
- access to a broad range of educational tools, applications and efficient technological resources;

- programmes that assist older adults in acquiring or borrowing necessary equipment (e.g. computers, phones, laptops, tablets) for digital education;
- the organization of small group activities, with a high degree of individualized support from volunteers, interns or co-trainers.

Participation in the activities

The digital education provided by the SACs is non-formal in nature. Participation in training cycles does not lead to the awarding of any formal diploma, certificate or official qualification. The educational format is open-ended, with sessions scheduled monthly throughout the calendar year. The schedules of sessions are published on the official website of the Krakow City Office and are accessible to all interested parties.

Senior Activity Centres are open every weekday for at least four hours per day. In practice, they remain open longer, allowing anyone interested to spend time in a centre, even outside of scheduled classes. These centres serve as local spaces for meetings, conversations, relaxation, meals and educational activities for older adults. Participation in SAC activities is open to individuals aged 60, with eligibility based on city residency rather than formal registration. Additionally, older adults are not assigned to a specific SAC centre and can attend various activities at multiple SAC centres. There is no rule stating that older adults can only use SAC services in the district or area where they reside.

Integrated and proprietary digital education

Each SAC is required to implement digital education activities, although the scope of topics varies among the centres. Some sessions focus on the use of devices, including tablets, smartphones and laptops. In contrast, others concentrate on the operation of web applications, websites, online platforms (e.g. e-banking) and mobile applications (e.g. mObywatel).[15] Each SAC has its proprietary approach to implementing these activities, allowing older adults to choose the sessions that best suit their needs.

Digital education sessions are conducted within an integrated educational framework. Two-hour workshops are held once or twice per week at each SAC, focusing on the use of computers, smartphones, applications and programmes. The skills acquired in these sessions are also applied in other activities.[16]

15 mObywatel (mCitizen) is a free mobile application developed by the Polish Ministry of Digital Affairs that allows citizens to access digital documents and public services.

16 Examples include accessing YouTube resources during sports classes; acquiring the ability to use maps during trips; and searching for instructive content during manual, artistic and other workshops.

Access to technology and equipment

Each participant can access equipment provided by the SAC, borrow devices from the Krakow City Office (UMK), or use their own computer, smartphone or tablet. The latter option is the most preferred by older adults, although the generational diversity of devices can sometimes hinder the smooth implementation of activities. Additionally, SAC centres include internet cafes, which offer online access, applications and software during the centres' operating hours, allowing older students extra time for practice.

Recruitment and promotion

Information about digital education sessions is disseminated through posters, leaflets, social media and SAC websites, where the schedules of planned activities are posted regularly. Moreover, each SAC is required to send the schedule for the upcoming month to UMK, which publishes these timetables on a website[17] that functions as a municipal portal gathering all relevant information and updates of interest to older adults in Krakow.

Registration for classes and inquiries are typically handled via phone, the simplest and most preferred form of contact for older adults. Some users also contact SAC centres via email.

Financing and inclusivity

All technological and other activities organized within the SAC framework are provided at no cost to older adults. There is no differentiation based on income, social status, family situation or other factors. In this sense, SAC activities are fully inclusive.

Education and teaching strategies

Teaching methods include mini-lectures, interactive exercises, online exercises, training games and Q&A sessions. The emphasis on practical exercises enables participants to develop digital skills that are directly useful in their everyday lives. In-person consultations allow the pace and scope of learning to be adapted to the needs of each participant. Older adults can attend sessions at their convenience, making consultations more convenient and accessible. Some SAC centres also offer hybrid sessions, where participants can join online classes.

The sessions are led by experienced trainers who possess educational, psychological and technical backgrounds, and are often of a similar age to the students they teach. Experience working with older adults is considered

17 Kraków dla Seniora. n.d. Available at: https://dlaseniora.krakow.pl/ (Accessed 1 October 2025)

an asset, as it enables trainers to fully understand the needs and communication styles of older adults. The trainers apply an active approach, continuously creating opportunities for practice, encouraging questions and fostering a relaxed atmosphere. This approach facilitates engagement and helps older adults to assimilate knowledge in a clear and accessible way.

The sessions are continuous, with participant numbers varying in different classes. They are very popular, with some older students attending regularly to enhance their skills, while others attend once or twice to resolve specific issues with their computers or smartphones. Group sizes range from 4 to 12 participants. The classes primarily use laptops, multimedia projectors, smartphones, smart bands and software that enables the completion of daily tasks. Smartphones and laptops are the most commonly chosen tools, as older adults are particularly eager to learn how to operate them.

SAC centres adopt an individualized approach to educational materials. Some prepare their own, while others make use of pre-existing resources available to users' devices over the Internet. Sometimes, trainers develop their educational materials based on feedback from older students, their extensive experience working with older adults and their knowledge of new technologies. Materials may include PowerPoint presentations, quizzes, applications, instructional videos (e.g. those on YouTube), group content on Facebook, infographics, PDFs, website content and other digital resources. Participants also prefer to take their notes during sessions.

Educational needs assessment

The educational needs of older adults are identified based on their ongoing suggestions and observations made during consultations. After each session, participants also may be asked to provide feedback on their experiences and expectations, which helps organizers tailor future content more effectively. This individualized approach allows the topics and format of the sessions to remain flexible and adaptable to current demands as well as emerging trends. Additionally, SAC coordinators meet with UMK representatives monthly, providing an opportunity to exchange ideas, share experiences and update each other on current developments, thereby fostering mutual inspiration and a broader understanding of the needs of older citizens in the city.

The curriculum

Each SAC has a customized curriculum, modifiable based on feedback and participant needs, but which covers the basics of smartphone operation, internet usage, information searching, and the fundamentals of digital security and personal data protection. Older adults also learn how to navigate social media platforms and use free applications that facilitate their daily lives. Students in the studied SAC centres mastered a range of digital tools, including communication platforms, creative software, learning apps, productivity suites, wellness trackers, streaming services, social media and e-commerce applications. Upon request, older adults can also receive training on AI applications, online appointment booking for medical visits and online banking. The curricula also incorporate content related to fact-checking, assessing the reliability of information, and key aspects of digital security, such as avoiding scams and phishing and protecting one's online identity.

The curriculum framework and course goals are established by the coordinator in collaboration with the trainer. The trainer is responsible for the course proposal, while the coordinator ensures its approval.

Collaborations and partnerships

Some SAC centres collaborate with educational institutions, including primary and secondary schools, as well as universities. Through school volunteer programmes and academic internships, they receive support from volunteers – students and pupils – who assist in conducting digital education sessions as educational assistants. However, respondents in the study noted that recruiting volunteers for collaboration is a challenging task. The programme also fosters intergenerational relations through joint projects carried out by older and younger volunteers, promoting mutual support and learning.

Occasionally, some initiatives may require collaboration with commercial partners, such as sponsors, to provide funding for equipment, individual consultations and support for older adults in their homes with the operation of desktop computers. Since digital education in this case study is implemented by NGOs, such long-term partners, donors and benefactors often contribute to creating and expanding the partnership network.

Evaluation, monitoring and impact assessment

Most SAC centres – albeit not all – engage in activities aimed at assessing the quality of sessions provided. Regular consultations with participants and subsequent analysis of their feedback are undertaken to understand which programme aspects most effectively align with their expectations, with a view to adjusting course content to better meet their needs. Periodic surveys also allow participants to express their observations freely and help to identify areas in need of improvement. This dual evaluation system provides a comprehensive picture of the effectiveness of sessions, enabling prompt responses to meet emerging needs and the evolving expectations of older adults.

The entire programme is monitored by the Senior Policy Department at Krakow City Office (UMK). In parallel, coordinators conduct systematic programme monitoring

to continually adapt the programme to the needs of older adults, tracking attendance and, via informal methods, assessing the level of digital skills acquisition among participants through participatory observation. Feedback from monitoring is then shared during monthly meetings with UMK representatives. In addition, upon completion of each funding period (at least two years), UMK conducts a comprehensive survey evaluation of various aspects of the programme.

UMK is also the institution responsible for longitudinal systematic assessment of the programme, but at present has no plans to conduct such research studies, citing a lack of financial and human resources. A potential solution could be to collaborate with the academic community; however, based on the interviews conducted for this study, the latter are more interested in the results of such research than the municipal officials responsible for its implementation.

5.5 Impact of the programme on older adults

The programme' impact on participants is most visible in terms of increased confidence in using technology, improved digital literacy and greater social engagement. Overall benefits include enhanced independence, a stronger sense of agency and increased self-esteem through the development of digital competencies. These positive impacts significantly combat social exclusion. Seniors, as reported by themselves and the organizers of digital education, develop habits for safe internet use, adopting new technologies and applications with more ease. The programme also benefits the entire local community by increasing older adults' involvement in social life and their ability to use technology independently. As a result, older adults become more active, better informed and more eager to participate in local community life, which positively influences intergenerational integration and social participation. Older respondents also emphasized that the digital competencies they acquired have improved their relationships and communication with younger family members – both their children and grandchildren.

However, one of the challenges facing digital education organizers is finding increasingly effective ways to motivate older adults to participate in sessions and expanding awareness of such activities to a broader audience. The aforementioned challenges are illustrated by the statements of some older adult participants:

'It would be very helpful to have more practical exercises, because it's difficult to remember everything on my own.' (male participant, 78)

'*I was embarrassed to ask because I didn't want to appear as someone who couldn't use basic functions. The classes were very helpful, but I had trouble with the technology – the computer didn't always work the way I wanted it to.'* (female participant, 72)

'The classes were interesting, but I think for some of us, it was too difficult. We would have preferred more simple examples.' (female participant, 84)

'Understanding how the phone works took me longer than I thought, but now I feel more confident. … Thanks to these classes, I can talk to my children on Skype, but sometimes I feel lost when something goes wrong.' (male participant, 77)

'I missed having more attention paid to our individual needs – some of us have completely different experiences with technology. I wish there was more time for asking questions – it was hard to understand everything during the class.' (female participant, 71)

5.6 Conclusion

The primary challenge to ensuring digital inclusivity among older adults is reluctance and lack of confidence. This resistance can be overcome by fostering self-efficacy and gradual skills improvement. Senior Activity Centres deliver quality instruction tailored to the cognitive characteristics of older learners, combined with modern devices and internet access (Pivorienė *et al*., 2024). The training emphasizes active learning, experience-based methods and cognitive-stimulating exercises, and is delivered through innovative approaches that address variations in digital skills, demographics and social contexts, significantly enhancing its effectiveness. Such active and personalized educational strategies play a pivotal role in minimizing digital exclusion among older adults and fostering digital engagement (Hladek *et al*., 2024; Tomczyk and Edisherashvili, 2024).

Senior Activity Centres use effective outreach models to build engagement among older adults, disseminating information, leveraging local partnerships and employing peer-to-peer learning models. The use of flexible schedules, small groups and patient instruction techniques further enhance participation (Goodman and Lambert 2022; Imlach *et al*., 2017; Jin, 2024; Kebede *et al*., 2022; Pivorienė *et al*., 2024). Key benefits observed among participants include increased digital awareness, reduced stress in daily tasks and enhanced mobility. Improved technological proficiency also fosters independence and

social participation, while easing caregiving burdens. Older adults gain confidence in managing banking, healthcare and online shopping, while also strengthening their awareness of fraud (Boot, Lin and Chung, 2024; Sen, Prybutok and Prybutok, 2022).

At the policy level, no dedicated national strategy currently exists to address digital exclusion among older adults. Instead, digital education is integrated into broader activation initiatives, including SACs, which align with lifelong or late life learning principles and emphasize diverse educational opportunities (Brink, 2017; Peeters, Kenny and Lawlor, 2020; Xie and Bugg, 2009). Looking ahead, such programmes should be embedded into broader educational frameworks as part of a holistic approach to the development of older adults and should receive stable public funding to ensure the sustainability of digital education.

More broadly, social policies need to incorporate digital education for older adults as an integral component of social integration and activation initiatives. This approach shifts the perception of older adults within local communities, fostering self-confidence and a sense of security regarding their digital competencies in social and public spaces, and increasing their motivation for deeper engagement and learning.

6. Shanghai University for the Senior: Advancing digital inclusion and lifelong learning for older adults in China

Virginia Rodés-Paragarino[18]

6.1 Introduction

This case study explores Shanghai University for the Senior (SUS), an institution that plays a leading role in lifelong learning for older adults in the context of China's ageing population and the country's digital transformation agenda. Shanghai University for the Senior was established in 1985. It was recently placed under the management of Shanghai Open University and approved to set up the Shanghai Branch of the National University for the Senior. This reflects the growing recognition that lifelong learning is crucial for promoting the independence, social inclusion, and well-being of the elderly.

With over 13,240 students enrolled, 97 per cent of whom are aged 50 or above (Shanghai International Services, 2025), SUS operates as a public, campus-based education institution, funded predominantly by local and national public resources. Its offerings span a wide array of programmes, including courses designed to enhance digital literacy, foster active ageing and promote social inclusion among older learners. A diverse staff consisting of over 300 full-time and part-time members reflects the institution's broad engagement in programmes targeting older adults. This institution integrates core principles into a range of programmes focus on skills that are relevant to contemporary societal participation, such as e-banking, e-healthcare and media literacy, catering to the physical, cognitive and socio-economic challenges faced by older learners (Gilleard and Higgs, 2015; Jarke, 2021).

The approach used by SUS to address the grey digital divide is informed by educational gerontology and digital inclusion frameworks. These frameworks confront disparities in digital literacy and the barriers faced by older adults, including ageism, inequities in access and the need for tailored teaching methodologies, and align with global policy goals to bridge technological gaps for older populations.[18]

This case study adopts a qualitative approach based on semi-structured interviews with a university administrator, an experienced teacher and two older learners (one male and one female), complemented by document analyses of institutional reports and national policy documents, descriptions of key initiatives, learning experience narratives and reviews of digital platforms. The findings provide insights into the practices of SUS to advance digital inclusion and lifelong learning for older adults, contributing to a broader understanding of effective strategies for promoting digital literacy and fostering educational equity and empowerment among ageing populations worldwide.

6.2 National and local contexts

China's national context

China is undergoing a demographic transformation characterized by a significant increase in its older population. In 2020, 18.7 per cent of the population was aged 60 and above, a figure projected to rise to 28 per cent by 2040 (WHO *et al.*, 2002). While this demographic shift presents both challenges and opportunities, strategies for lifelong learning and digital inclusion are an essential prerequisite to address the digital divide between older adults and the rest of the population. In 2024, China launched a national action plan for digital literacy and skills development to enhance digital competencies across different sectors. This initiative aims to cultivate digital talent, improve digital education in schools, promote equitable access to resources and foster international collaboration. These efforts align with broader policies aimed at older generations, notably the 'Plan to effectively solve the difficulties faced by seniors in using smart technology' (General Office of the State Council, 2020) and the 'Notice on the widespread implementation of education and training on the use of intelligent technology for seniors' (General Office of the Ministry of Education, 2021), both of which aim to fortify the digital skills of older adults, facilitating their integration into a smart society.

18 Institute for the Future of Education, Tecnológico de Monterrey, and EGADE Business School, Monterrey, Mexico

More recent digital policies adopted by the Government of China include the 'Programme to enhance the digital literacy and skills of the entire people' (2024), formulated by the Cyberspace Administration of the People's Republic of China (CAC), the Ministry of Education (MOE), the Ministry of Industry and Information Technology (MIIT) and the Ministry of Human Resources and Social Security (MOHRSS), and which aims to establish a lifelong digital learning system by 2025. This initiative is embedded within the broader national framework of the 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives (CCCPC, 2021), which promotes a structured and centralized approach to digital learning.

Government efforts have significantly improved digital literacy among older people, increasing their access to online services, healthcare and e-commerce, while reducing social isolation and enhancing economic participation (Li and Kostka, 2024). According to the National Bureau of Statistics, in 2022, the number of people aged 60 and above exceeded 280 million, accounting for 19.8 percent of the total population (Zhou, Bai and Wang, 2024). Additionally, internet use among individuals aged 50 and above increased from 32.5 per cent in December 2023 to 33.3 per cent in 2024, reflecting ongoing digital integration (CNNIC, 2024). However, disparities persist, particularly in rural areas where digital literacy is lower (Zhang, 2023). Based on data from the 2018 China Elderly Social Tracking Survey (CLASS), Zhang (2023) finds that, among older adults in rural China, basic digital skills remain limited and advanced competencies are rare. Yet both levels of literacy significantly improve access to services and information. Regional gaps are notable, with non-eastern areas showing greater needs. Family support in digital use further enhances outcomes, highlighting the urgency of targeted policies to bridge the rural digital divide and support ageing in the digital era.

Shanghai's local context

Shanghai has developed a comprehensive approach to advancing inclusive lifelong learning policies, with particular emphasis on promoting digital competence among older adults. The city has integrated educational innovation into its urban development strategies, a key component of which is the operationalization of national priorities at the local level through policy frameworks. The 14th Five-Year Plan for Senior Education Development in Shanghai outlines targets such as expanding access to digital education, improving the quality and adaptability of digital curricula, and promoting the professional development of educators in educational gerontology (Shanghai Municipal Education Commission, 2022). The 'Key points of lifelong education work' emphasize implementation fidelity, resource allocation and performance monitoring (Shanghai Municipal Education Commission, 2024a), while the 'Opinions on promoting the digital development of senior education' delineate practical interventions, such as establishing smart classrooms and developing interactive, multimodal educational content (Shanghai Municipal Education Commission, 2021). These strategies are further elaborated in the interdepartmental 'Municipal work plan for action on digital education for the seniors in the community', which promotes community-based support infrastructures, mobile digital services and intergenerational learning programmes as primary levers for change (Shanghai Municipal Education Commission, 2024b). These policies are complemented by broader frameworks, such as the 'Opinions on further deepening the construction of a learning city', which integrates older adult education into urban governance mechanisms (Shanghai Municipal Government Office, 2023).

Shanghai Open University (SOU) serves a dual role as both a provider and coordinator of lifelong learning opportunities across the municipality. Since July 2023, the administrative integration of SUS into SOU has led to an expansion in educational offerings and organizational scale. Shanghai University for the Senior has grown into a city-wide educational network, comprising a central university, over 40 branch campuses and 12 teaching centres. Its programmes reach more than 25,000 learners, with curricular offerings that include foundational digital literacy, e-government service navigation, digital art and culture, and cyber safety (SUS, 2025). The pedagogical model employed by SUS incorporates multimodal instruction, peer-assisted learning and personalized support through AI-enabled tutoring systems. Events such as open campus days and student digital exhibitions serve as outreach mechanisms and platforms for redefining ageing through technological engagement.

The conceptual framework adopted by SOU describes the institution as a 'platform university' operating across five interrelated functional domains: education delivery, community development, digital resource provision, learning outcomes accreditation and lifelong learning monitoring (Jia, 2022). This framework assesses each platform across dimensions such as coverage, relevance, effectiveness and satisfaction, providing a basis for continuous improvement. The Learning City Development Platform, for instance, supports the creation of localized digital learning ecosystems such as the '15-minute learning circle' and flagship initiatives like the 'Silver-Haired E-School', which democratize access to digital education through neighbourhood-based services. Meanwhile, the Credit Transfer Platform facilitates the recognition of learning outcomes through a city-wide academic credit bank, thereby formalizing non-degree digital competencies acquired by older adults. Lastly, the Monitoring and Research Platform collects data on learning behaviours and needs across demographic cohorts to inform programme design.

Shanghai's effort to promote digital competence a mong older people reflects a coordinated, multi-level governance approach to lifelong learning.

The collaboration between SOU and SUS highlights how educational institutions engage in joint initiatives related to digital inclusion and active social participation. As demographic ageing and digital transformation continue to converge globally, Shanghai's experience may offer insights that may inform approaches in other cities seeking to advance digital citizenship and promote lifelong learning in equitable and sustainable ways.

6.3 Institutional context

Building upon the national and local policy landscape, this section examines the institutional framework of SUS, highlighting its programme structure, target audience, strategic partnerships and the motivation underlying its digital learning initiatives.

Vision, mission and institutional motivation for digital learning initiatives

As noted above, SUS operates under the umbrella of SOU, benefiting from public funding. This positions SUS as a vital educational institution serving the needs of an ageing population. The Executive Vice President of SUS describes the mission of the institutions as 'promoting the integrated development of education for seniors and digital education, including digital literacy, to enhance their quality of life'.

The development of SUS's programmes reflects institutional priorities that are aligned with broader societal needs and national policy frameworks. China's ageing population presents distinct challenges, particularly a growing digital divide that risks excluding older adults from participating fully in modern society. In response, SUS has undertaken initiatives aimed at strengthening digital literacy, updating educational provision for older learners, and supporting active ageing. This approach is informed by national and international frameworks that emphasize lifelong learning and digital inclusion for older populations (Beblavý and Bačová, 2022; Tyler, De George-Walker and Simic, 2020; UNECE, 2021; WHO, 2002).

Internal and external collaboration

The programmes offered by SUS are implemented through collaboration with internal and external stakeholders. Internally, the Community Education Department of SOU plays a relevant role in curriculum development and programme delivery. Externally, the educational institution addresses diverse learning needs through innovative curriculum design and partnerships. Curriculum development at SUS is informed by expert consultations and resource evaluations. The institution collaborates with a range of stakeholders to design courses that are evidence-based, contextually relevant, and responsive to the learning characteristics of older adults.

Additionally, partnerships with external organizations, such as the Shanghai Smart City Development Institute, support the development of assessment tools designed to objectively measure learners' progress in digital literacy. Collaborations with institutions such as the Shanghai Natural History Museum and the Shanghai Citizens' Foreign Language Learning Centre contribute to a diverse curriculum. In addition, agreements with the Xuhui branch of the Bank of China and Shanghai Normal University facilitated access to financial literacy courses and educational resources, while partnerships with organizations like Alipay and China Telecom further support the sustainability and expansion of these initiatives. Strengthening alliances and securing additional resources are key to maintaining quality and expanding the university's impact. These collaborations facilitate the co-creation of digital learning resources, the design of smart applications and the provision of accessible educational tools. According to SUS's Executive Vice President, since 2020, the joint efforts of the Shanghai Municipal Education Commission and SUS has systematically delivered digital educational resources to older adults across the city. Over the past four years, more than 1,000 full-time lifelong learning educators and approximately 50,000 volunteers, including university lecturers, students and professionals, have contributed to this initiative. These efforts have reached over 3 million older adults in 6,000 community settings, significantly expanding access to digital learning opportunities for the older-adult population.

6.4 Implementation

This section examines SUS's approach to education for older adults, integrating learning needs assessment, curriculum design and teaching strategies, impact evaluation, and outreach and inclusivity.

Assessing the learning needs of older adults

SUS places significant emphasis on assessing the learning needs of its target population. Collaborating with organizations such as the Shanghai Municipal Institute for Lifelong Education and East China Normal University, the university has developed a comprehensive digital literacy framework and assessment tool. Surveys conducted in 16 districts in Shanghai and 25 provinces nationwide have provided detailed insights into the digital literacy levels of over 34,000 older adults. The findings revealed a significant demand for training in areas such as smartphone operation, online payments and accessing medical services. The research was

conducted in collaboration with external institutions to inform curriculum design and promote meaningful engagement among learners from diverse backgrounds. . Based on these assessments, the university designs and implements programmes that align with the interests and abilities of older adults.

Curriculum design and teaching strategies

Adopting a learner-centred approach and tailored programmes, SUS provides a diverse range of courses, covering areas from basic digital skills such as smartphone operation, to more advanced topics like artificial intelligence and e-commerce. To better address learners' needs, participants are categorized into three groups. The first group comprises individuals who face significant challenges in adapting to the digital era. The second includes those who aim to enhance their quality of life through digital literacy, utilizing technology for health services, entertainment and social networking. The third group consists of advanced users who seek opportunities for professional development. As the Executive Vice President notes, the aim is to 'provide developmental skills so that [older students] can transcend themselves, improve their innovative capabilities and realize their values'.

Teaching methods and learning modalities

SUS utilizes adaptive and flexible teaching methods, including blended learning, situational teaching and experiential learning (Beblavý and Bačová, 2022; Schlomann, Even and Hammann, 2022), tailored to accommodate diverse literacy levels and learning preferences. However, traditional face-to-face instruction remains a cornerstone of the programmes, providing a platform for direct interaction and personalized guidance, enabling structured and self-paced learning. Instructors provide additional support when necessary. These sessions are complemented by short-term workshops on specific topics, such as network security and mobile applications. Distance education resources further enhance accessibility, providing learners with tools such as video tutorials, e-books and online assessments. This hybrid model accommodates diverse schedules and learning preferences, helping to ensure education remains widely accessible. The teaching methods also emphasize experiential learning, utilizing the 'Smart Life Experience Classroom' to simulate real-life scenarios. Such immersive simulations (Castro Rojas, 2021), allow for interactive, scenario-based instruction (Sayago, Forbes and Blat, 2013) enabling learners to develop essential digital competencies through hands-on experience (Murphy, 2016; Sandhu, Damodaran and Ramondt, 2013). This approach aims to improve practical skills and confidence in areas such as digital transactions, social media engagement and virtual healthcare navigation, thereby supporting digital literacy in relevant contexts (Friemel, Frey and Seifert, 2021). Visual and interactive learning spaces further support skills development (Castro Rojas, 2021), encouraging active participation and enhancing learners' confidence in the independent use of digital tools.

To support diverse learning needs, including self-directed learning, SUS offers materials in various formats, including textbooks, lecture notes, e-books, video tutorials and interactive platforms. These resources are developed by experienced educators and experts, to help ensure both quality and accessibility. Illustrations and step-by-step instructions facilitate comprehension, helping learners gradually build their digital skills. Self-directed learning is promoted through the provision of online resources and self-paced modules, enabling students to tailor their learning journeys to their individual needs, thereby supporting accessibility and inclusivity (Murphy, 2016).

Special attention is given to socio-economically disadvantaged groups, older women and individuals with disabilities. Learning platforms and programmes cater to individuals with mobility challenges or limited internet access. To reduce financial barriers, the institution offers subsidized or free courses and provides teaching accommodations, such as specialized seating arrangements for learners with disabilities.

Intergenerational learning is also a key component of SUS's strategy, the importance of which has been emphasized by the European Agenda on Adult Learning (EU, 2021). Programmes like 'Big Hands Holding Small Hands',[19] offered by SUS, connect older learners with younger volunteers to collaborate on digital skills training, fostering cross-generational connections and shared learning experiences. Such intergenerational learning programmes encourage mutual understanding, strengthen family bonds, and reshape societal perceptions of ageing, reinforcing intergenerational cooperation and respect.

Curriculum content and key learning areas

The curriculum of SUS targets the enhancement of the digital skills of older adults through a student-centred and demand-oriented learning approach. Programmes address a broad spectrum of interests and needs, offering courses such as iPad, Smartphone Applications, Mobile Photography, Online Life and Smart Home Life.

19 'Big Hands Holding Small Hands' is an intergenerational education initiative that forms part of a broader strategy to enhance digital literacy among older adults through structured, collaborative learning experiences. As mentioned by the Executive Vice President of SUS, a key component of this initiative is the establishment of a volunteer team composed of junior and senior high school students. These young volunteers contribute actively to the development of digital competencies among older adults by offering direct assistance and peer-to-peer support.

These foundational courses are supplemented by 18 experiential modules, including 'Safe Payment Intelligent Travel', 'Smart Life: Smart Home' and 'Health Experience and Intelligent Medical Treatment.' In 2023, the university launched the 'Campaign for National Digital Literacy and Skills Enhancement,' which covered themes such as AI technology, digital travel, photography and editing. The campaign attracted nearly 17,000 learners through 64 specialized training sessions, both online and offline. The curriculum's advanced topics reflect the rapidly evolving digital landscape. For instance, the university invites experts to deliver lectures on topics such as 'Empowering Older Adults' Lives with AI', exploring the applications of generative AI in areas like health management, lifelong learning and artistic creation. These sessions draw large audiences both on-site and online. While these initiatives demonstrate SUS's efforts to incorporate emerging technologies, the integration of AI into routine teaching and learning practices remains at an early stage, with further development needed for deeper, scenario-based applications. Additionally, the university integrates practical skills into the curriculum, addressing digital literacy issues such as fact-checking and evaluating online information. Courses like 'Learning Intelligent Applications' and 'Be Smart Seniors' teach learners to identify official websites, avoid misleading advertisements and critically analyse public information, thereby contributing to improved online safety and information literacy.

Digital safety is emphasized through dedicated content on preventing scams, identity theft and phishing. Practical tools, such as the National Anti-Fraud Centre app, are introduced into courses to enhance awareness and provide learners with practical skills for secure digital navigation. These initiatives aim to support older adults' confident participation in the digital environment.

6.5 Assessing impact: Evaluation, monitoring and quality assurance

Evaluation is essential to maintaining the effectiveness of the programmes. SUS employs a range of methods, including questionnaires, interviews and skills assessments, to evaluate learning outcomes and gather feedback. This iterative process enables ongoing refinement of teaching plans, resource allocation and curriculum design, supporting the continued relevance and effectiveness of programmes.

Quality assurance is central to maintaining the programme's standards. Accordingly, SUS continuously invests in faculty development and implements systematic teaching management practices. Monitoring and evaluation mechanisms, such as digital literacy assessment tools, support the ongoing alignment of the curriculum with learners' needs and enhance its effectiveness. The outcomes of these efforts are evident in the positive feedback from participants, who report improved digital skills, enhanced social connections and increased independence in managing daily tasks. The programme's impact extends beyond individual learners, benefiting their families and communities by promoting broader digital literacy. Initiatives like online medical consultations and remote shopping, facilitated by these programmes, contribute to enhancing the efficiency and accessibility of community services. However, despite its successes, the programme faces challenges such as overly complex interfaces and insufficient guidance and inadequate technical support on the use of digital platforms. Addressing these hurdles remains a priority as the university continues to refine its offerings and expand its reach.

Regarding the impact of the implementation, SUS has made measurable progress in expanding educational access for older adults. SUS offers more than 700 classes each semester, covering traditional arts and modern technology. Increased enrolment in autumn 2024 offered the opportunity to serve over 25,000 students, with nearly 10,000 new spots added to accommodate growing demand for lifelong learning among seniors (Shanghai Municipal Government, 2024).

Outreach and inclusivity

SUS implements strategies to engage a wide and diverse target audience. While in-person programmes typically cater to women aged 50 and above and men 60 and over, the institute also extends its reach through online platforms, helping to overcome geographical limitations and increase access for learners both within China and internationally. To date, more than 20,000 individuals have participated in courses, while SUS's digital platforms and virtual courses further expand access, with millions of views recorded across various online channels. Educational platforms such as Lexue Lecture Hall, Premium Courses and Elderly Starry Sky IPTV have accumulated over 10 million views, including global audiences (Wang and Han, 2022). In addition, the 'Smart Life Experience Classroom' has received nearly 10,000 visitors from China and abroad (Jia, 2024). SUS promotes a borderless learning model that aims to remove barriers related to age, gender and location in digital learning, aligning with global lifelong learning goals (Jia, Peng, and Jia, 2022). Its digital offerings increasingly serve the Chinese diaspora and exhibit potential for multilingual and intercultural engagement.

Outreach and communication strategies combine both digital and traditional methods to reach this broad audience. Information about programmes, courses and events is disseminated through the institution's official website, WeChat account and social media groups, allowing for direct interaction with learners.

These platforms are regularly updated with new digital learning resources, allowing older adults to access materials and continue learning at their convenience. In addition, offline channels, such as community announcements and word-of-mouth referrals, supplement digital outreach efforts, helping to enhance inclusivity, particularly among individuals with limited digital access or literacy. Inclusivity in recruitment and outreach is a central focus for SUS. The university seeks to engage diverse groups, including individuals from socio-economically disadvantaged backgrounds, and undertakes initiatives aimed at addressing age-related stereotypes. Through public awareness campaigns and educational programming, SUS promotes a more positive and nuanced understanding of ageing. By highlighting the creativity, resilience and adaptability of older adults, the institution contributes to shifting perceptions regarding their learning abilities and contributions to society. These efforts not only empower participants but also foster a broader societal appreciation of older adults' capabilities. These initiatives do not only address individual needs but also contribute to broad community development by enhancing digital literacy across households and neighborhoods. Older learners frequently participate in volunteer activities, which further extend the programme's social impact. Despite these extensive efforts to broaden participation and reduce barriers, challenges remain in the equitable allocation of educational resources, particularly between central urban and suburban areas, where disparities in infrastructure and teaching capacity can limit access for some learners.

Learners' voices: Experiences and transformations

This section highlights the impact of lifelong learning at SUS through the experiences of two learners, one female and one male. These perspectives offer insights into how the institution supports lifelong learning and digital inclusion for older adults and provide a contextualised understanding of its impact.

A 64-year-old female learner has a background in management. She retired at the age of 60 and has since pursued personal interests through courses offered by SUS, encouraged by the supportive environment provided by the institution. She perceives the university's programmes as enriching and well-suited to the needs of older adult learners and also appreciates the affordability of the courses, noting that tuition fees are minimal and accessible to all. She highlighted the inclusivity of SUS as a factor of importance, recounting a classmate's experience of receiving support from peers during a cancer health crisis. She also appreciated the teaching strategies employed by the university, including the use of individual computers and digital tools during sessions. Although she has not participated in formal intergenerational education at the university, she has benefited from such experiences in her community, which she described as supportive and respectful and lacking in stereotypes or biases against older learners. She attributes her success to the support from teachers and classmates and is satisfied with the programme.

A male learner, aged 68, is a former school principal who, since retiring, has participated actively in lifelong learning programmes, including digital skills training, motivated by a desire to keep pace with technological advancements and remain actively engaged in society. His interest in ICTs led him to enrol in courses covering smartphone basics, advanced applications and AI. His family and friends are supportive, and his wife also participates in courses at the university, albeit in different subjects, reflecting a shared enthusiasm for lifelong learning. He appreciates the university's tailored curriculum and highly qualified teaching staff and values the diversity in courses and the opportunities for hands-on application. He emphasized the importance of incorporating real-life scenarios into digital skills training, such as e-banking and e-healthcare. He appreciates that the university promotes the idea that older adults can actively contribute to and benefit from digital transformation and praises the university's curriculum for its balance between theoretical knowledge and practical application, highlighting interactive methods like field visits for photography and immersive scenarios for AI and digital tasks. He also values the university's commitment to maintaining high teaching standards and finds intergenerational learning highly beneficial. Initially, he relied on his children for technical help, but now, he takes pride in sharing his knowledge with younger generations. His participation in SUS programmes has significantly enhanced his independence and digital competencies, which has enabled him to volunteer in his community.

Learner feedback, including the experiences described above, highlights the capacity of institutions such as SUS to enhance the lives of older adults in meaningful ways. These accounts illustrate how tailored educational programmes support digital engagement, foster intergenerational connections and contribute to personal and social well-being. Older learners' reflections on accessibility, curriculum relevance and community support suggest that SUS effectively address the diverse needs and aspirations of older adults. Moreover, the broader societal benefits of SUS initiatives – such as enhanced autonomy, digital literacy and strengthened community bonds – are also evident.

6.6 Conclusion

The SUS case study provides an example of how lifelong learning programmes can support older adults in developing digital competencies relevant to daily life. In alignment with national and international policy frameworks, including the World Health Organization's (WHO) framework for active ageing (WHO, 2002), the

institution contributes to broader efforts aimed at promoting digital inclusion among ageing populations. Its initiatives are designed not only to introduce older adults to digital tools but also to support their use in assessing services and engaging in contemporary communication networks. SUS's emphasis on interactive approaches and applied learning methods reflects an approach intended to improve learners' confidence and facilitate the practical application of skills in everyday contexts.

Inclusivity is a central consideration in SUS's approach. The institution places emphasis on affordability, accessibility and adaptability, encouraging all learners – regardless of socioeconomic background or physical ability – to develop digital competencies. Targeted support measures are implemented to address barriers related to physical impairments, cognitive challenges and social stereotypes. SUS also undertakes initiatives aimed at countering ageism such as intergenerational learning activities, public awareness campaigns, and accessible course designs incorporating assistive technologies and adaptable teaching methods. These strategies aim to support older learners in navigating digital environments with greater autonomy and confidence. SUS employs a data-driven approach to evaluate digital literacy levels and maintains feedback loops to refine its programmes. The motivations driving older learners – social connection, empowerment and practical applications (Ala-Mutka *et al*., 2008; Pihlainen *et al*., 2023) – underscore the socio-emotional and cognitive benefits of digital literacy (Yeung *et al*., 2022). As older learners transition from passive technology users to active digital participants, they can gain autonomy and reinforce their role in community life, helping to reduce digital isolation.

SUS offers a case from practice that informs ongoing discussions on ageing and digital inclusion, providing insights that may be of relevance to policy-makers, educators and organizations seeking to promote more accessible and equitable approaches to education. Nonetheless, two key challenges remain. First, the integration of advanced digital technologies such as artificial intelligence is still at a preliminary stage. Applications largely focus on basic teaching functions, with limited scenario-based innovation and insufficient collaboration with research institutions or private-sector partners. This constrains the development of more responsive and adaptive learning environments. Second, the allocation of educational resources remains uneven, with central urban areas typically benefiting from more robust infrastructures and a wider range of courses, while learners in suburban areas often face limited access due to shortages of venues and qualified teaching staff. Addressing these issues may require strengthened cross-sectoral partnerships, targeted investment in underserved areas and more coordinated approaches to technological innovation and resource planning. Such efforts could support a more inclusive, balanced and future-ready learning system for older adults.

7. Digital empowerment for older adults at parents' daycare social clubs: Abdullah Bin Yousef-Fakhr Social Club for Parents, Social Welfare Department, Ministry of Social Development, Kingdom of Bahrain[20]

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7.1 Introduction

The Arab countries of the Middle East and North Africa (MENA)[23] are facing a demographic shift characterized by an ageing population (United Nations, 2025). Life expectancy has risen over the past 50 years, and the older population (aged 60 and above) is projected to increase to 21 per cent by 2050 (Chalghoumi *et al*., 2022; Mikołajczyk, 2023), while the fertility rate decreased to 2 per cent as of 2020 (Bahrain Open Data Portal, 2024). However, ageing trends vary across the region, with some countries having a higher proportion of older adults than others (UN, 2025). In this context, digital inclusion among older adults remains a critical challenge, even in areas with high literacy rates and advanced digital infrastructure (Muschert and Ragnedda, 2024).

This case study explores the available digital services and programmes for older adults in Bahrain. Data were collected through qualitative methods using semi-structured interviews and document analysis. Four participants actively involved in digital inclusion initiatives were interviewed in February 2025 – a Head of Section from Bahrain's Ministry of Social Development (MOSD), a digital skills trainer, and two older adults (one man and one woman) from the Abdullah Bin Yousef-Fakhr Social Club for Parents. The selected reports and policies relate to digital inclusion efforts in Bahrain, including the National Development Strategy: Bahrain Vision 2030 (Invest in Bahrain, 2025), the Rights of Older People (Law No. 58 of 2009) (Kingdom of Bahrain, 2009). The findings suggest that personalized training, ongoing institutional support and cross-sector collaboration improve digital confidence among older adults.

7.2 National and local context

The Kingdom of Bahrain is classified as a Small Island Developing State (ITU, 2021). Administratively, it is divided into four governorates: Capital, Muharraq, Northern and Southern. Each governorate is overseen by a governor appointed by the Prime Minister and operates under the authority of the central government. In line with Bahrain's Economic Vision 2030, the government has launched several initiatives to promote sustainable development and improve public services. While these initiatives are centrally coordinated, their implementation occurs at the governorate level, with local authorities, such as the Ministry of Social Development (MOSD) playing a crucial role in executing national policies and programmes. These efforts are tailored to each governorate's specific needs and contexts, promoting balanced and sustainable growth throughout Bahrain (Government of Bahrain, 2023a).

According to the Information and eGovernment Authority of Bahrain (Government of Bahrain, 2025), the estimated population of 1.59 million is projected to reach 1.83 million by 2029 (Statista, 2025). Under the Older Adults Rights Protection Law No. 58 of 2009, which defines an older person as anyone aged 60 years or above, this group currently numbers around 85,419 people, or 11.5 per cent of the population. As Bahrain's population continues to

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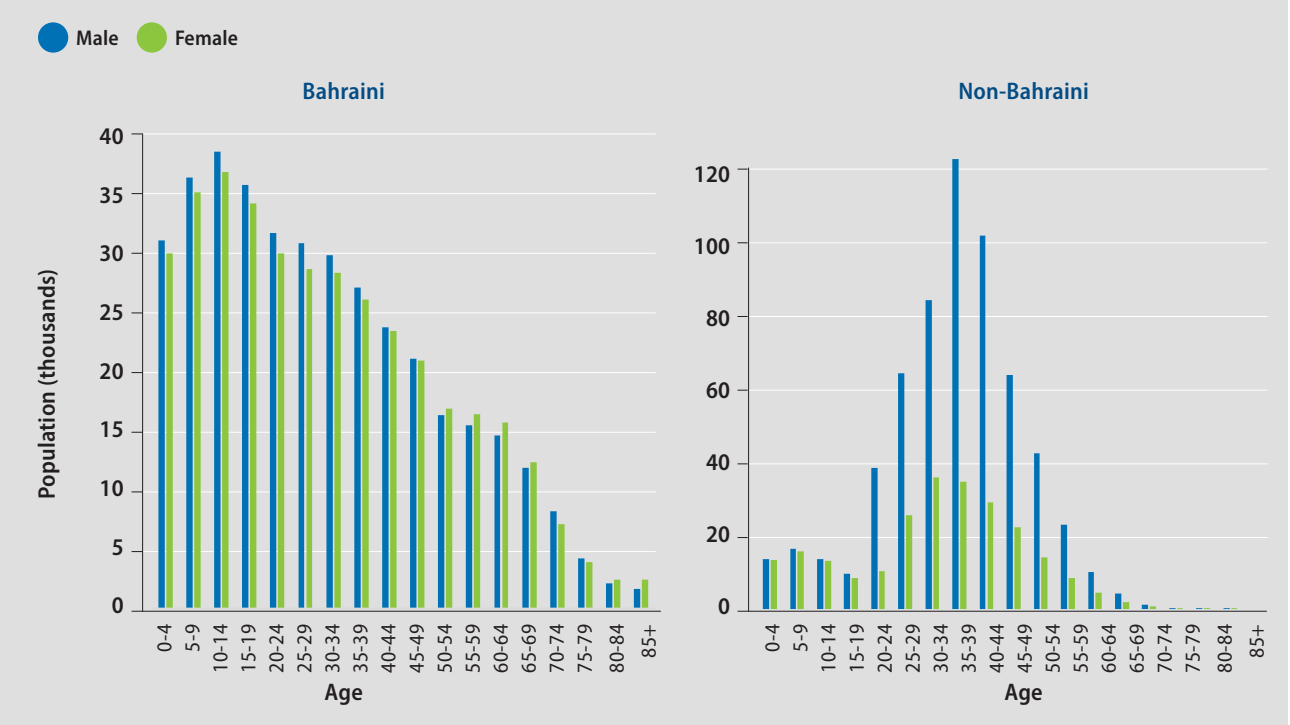
23 Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the United Arab Emirates, the West Bank and Gaza, and Yemen.

FIGURE 7.1 Population distribution in Bahrain (December 2024), by sex and nationality



Source: Bahrain Open Data Portal, 2024.

age, with an average life expectancy of 65 years for men and 77 years for women (Al Hashimi, 2021), the demand is growing to empower older citizens with digital literacy skills so that they can remain employable, enhance productivity and contribute to the economy (see **Figure 7.1**).

Socio-demographic factors, such as gender, age and socio-economic status, influence digital inclusion (Muschert and Ragnedda, 2024), underscoring the need for programmes tailored to older adults' specific needs. In response, the Bahraini government has incorporated digital inclusion initiatives for older adults into the National Development Strategy 2030, which promotes inclusivity and the principle of 'leaving no one behind' (Government of Bahrain, 2025). Law No. 58 of 2009 on the Rights of Older People (Kingdom of Bahrain, 2009) supports these initiatives by promoting the development of cognitive and digital skills to enable older adults to engage in the digital world.

Bahrain ranks fourth in the Arab States region for mobile broadband subscriptions, with 122.6 subscriptions per 100 inhabitants, exceeding the global average. 100 per cent of its inhabitants and 99 per cent of households have access to the internet (ITU, 2021). Bahrain has also demonstrated significant advancements in e-government practices, reflected in its positive standing on the United Nations E-Government Development Index (EGDI), ranking second after the United Arab Emirates (UAE) (ITU, 2021).

Programmes oriented towards older adults in Bahrain

In Bahrain, the MOSD nurtures the older population by offering comprehensive services aimed at preserving family bonds and their societal role. These include financial aid, healthcare, housing assistance, transportation, social development and recreational programmes. Within their institutional framework, Care and Protection Services for older adults, in collaboration with the National Committee for Older Adults, focus on creating and executing initiatives that provide essential care, enhance quality of life and foster social integration (MOSD, 2023). These efforts include programmes aimed at integrating older adults into society and valuing their contributions, alongside educational initiatives to inform families and communities about their rights, needs and the challenges they encounter (ibid.). These actions align with Sustainable Development Goal 10 (reducing inequalities) by addressing age-related discrimination and exclusion, and increasing awareness and recognition (Government of Bahrain, 2023b).

Bahrain's Government Plan 2023–2026 emphasizes the development of social services for older adults, supports policies that preserve their purchasing power, and encourages the utilization of retirees' expertise through community engagement and volunteerism (MOSD, 2022a, 2025). Additionally, the MOSD collaborates with other public authorities, such as the Ministry of Transportation

and Telecommunications, the Information & eGovernment Authority (iGA), and the Ministry of Health, to establish a database that supports research and studies aimed at understanding older adults' circumstances and access to care and services (Government of Bahrain, 2023b). For instance, the MOSD supervises several day care institutions for older adults, known as social clubs, within a community partnership framework. These provide social, health, psychological and recreational services to integrate older adults into society (MOSD, 2023). Such efforts stem from a broader commitment to fostering older adults' independence, reducing social isolation and enhancing their overall quality of life.

7.3 Institutional context

This section provides an overview of the social club context, introducing the subject of the case study: the Abdullah Bin Yousef-Fakhro Social Club for Parents.

Social clubs offering digital literacy programmes, and their driving factors

As services increasingly move online, older adults must be equipped to navigate digital platforms with confidence. Additionally, enhancing digital literacy among the older population and promoting integration fosters independence and improves their quality of life. Marston et al. (2019) and Pihlainen et al. (2023) affirm that digital skills help older adults combat social isolation by enabling them to connect with family and community through digital communication. Digital security awareness is also vital, as online fraud often targets older adults. In addition, many older adults wish to remain active in the workforce or pursue new ventures, making digital literacy essential for economic empowerment as well as lifelong learning and active ageing initiatives.

In this context, government agencies including the MOSD and various stakeholders such as social clubs[24] and non-profit organizations in Bahrain have co-designed tailored programmes addressing the specific needs of older adults, empowering them with essential digital skills. Institutions like the Durrat Al Riffa Social Club host workshops, including the 'Ishraqa Lab' developed by the MOSD Digital Skills for Seniors Foundation, which provides a hands-on digital learning environment for older adults. The eGovernment Authority and Naba Reis Science Academy also deliver targeted courses on e-government services. Meanwhile, the Abdullah Bin Yousef-Fakhro Social Club, through its 'On My Wing' initiative, focuses on practical digital skills, such as email and cybersecurity. A key element of these initiatives is personalized learning. Trainers employ individualized methods to boost participants' confidence and effectiveness in using digital skills in their daily lives. In the following sections, the MOSD Head of Section outlines the motivations, participant demographics, key partnerships, and strengths and challenges of these programmes.

Target group and participant demographics

The beneficiaries of these digital literacy programmes are individuals aged 60 and above. Currently, the government supports 13 daytime care institutions that cater to the needs of older adults, including digital skills training. Contrary to children's daycare centres, parents' daycare is a service offered by the MOSD to provide morning care for older adults in local neighbourhoods across Bahrain, offering social, health, psychological and recreational services while promoting integration into society. According to the MOSD, these day centres collectively serve a registered affiliate base of 1,938 individuals in 2025, comprising 818 men and 1,120 women. For example, the Abdullah Bin Yousef-Fakhro Social Club for Parents, the focus of the case study, serves 251 older adults, including 74 men and 177 women. At least 40 employees and volunteers dedicated to facilitating digital inclusion among older adults have received training to provide care.

Institutional structure and key partnerships

The successful execution of these programmes relies on the MOSD, an institutional structure with multiple stakeholders. Partnerships with civil society organizations, such as the Wisdom Society for Retirees (MOSD, 2022b) enable accessible training programmes tailored to the needs of older adults (ibid). The Royal Humanitarian Foundation (2025) also works to expand digital training courses in local community centres (ibid.). Such collaborations sustain and scale initiatives, making them more adaptable to the evolving needs of older adults. For instance, rehabilitation programmes in partnership with the Ministry of Labour (MOL) provide targeted digital training to enhance the employability of older adults desiring to remain in the workforce (MOL, 2021).

Institutional strengths, challenges and future directions

Bahrain's approach to digital literacy programmes for older adults is built on several pillars. Free digital training offered through social clubs and care institutions seeks to provide them with accessibility, while the nation's digital government strategy integrates seniors into the

24 A social club in Bahrain is an institution where strangers gather and through institutionally mediated interactions, become acquaintances or friends (Kaplan, 2018). In Bahraini society, social clubs serve as spaces for the revival of traditional culture and heritage, promoting public participation and social cooperation (El-Ghonaimy and Al-Haddad, 2019), and even transcending borders (Bhatia, 2023).

digital landscape by modernizing government portals, expanding self-service e-government platforms and providing public Wi-Fi in older adult care facilities.

However, challenges remain. One hurdle is resistance to digital adoption among some older adults, who feel intimidated by technology, especially application features. The female learner who was interviewed stated that many older individuals when encouraged to familiarize themselves with technology, respond with phrases like, 'no, we are old and we cannot', leading to assumptions of age-related intimidation or resistance. Learners who wish to engage have requested dedicated support channels, continuous development of senior-friendly digital interfaces and simplified training materials. Overall, Bahrain has made significant strides in digital inclusion, but ongoing training and support is needed to ensure all older adults can use basic application features.[25]

The trainer at the Abdullah Bin Yousef-Fakhro Social Club indicated that several key strategies have been implemented to enhance Bahrain's digital literacy programmes for older adults:

- practical, hands-on training courses for applying digital skills in real-life situations;
- flexible learning options, including online modules and in-person sessions, tailored to various learning preferences;
- improved accessibility features in digital services, such as larger fonts and simplified navigation;
- a technical-support hotline for seniors that provides timely assistance.

Planned actions include involving corporations in digital training for retired employees (potentially providing tablets as part of corporate responsibility), developing senior-friendly applications and adding digital literacy courses to their community programmes. These plans also encompass encouraging businesses to offer digital training as corporate responsibility, involving universities, mobilizing young volunteers, and providing certifications to boost participation, motivation and involvement. Finally, awareness campaigns promoting the benefits of digital literacy, such as accessing healthcare and managing finances, are envisioned to drive engagement.

7.4 Implementation

The programmes at social clubs provide holistic benefits perceived to benefit mental health, family dynamics and social connections. As the MOSD Head of Section commented, 'Integrating older adults into daytime institutions has given [them] a sense of belonging. Even those with psychological conditions have seen their issues diminish with increased engagement in these institutions.'

Needs assessment and integration into programme design

The programme trainer explained that to effectively align the digital literacy programme with the specific realities and expectations of older learners, the Abdullah Bin Yousef-Fakhro Social Club conducts annual assessments through interviews and surveys. These tools gather information about participants' technology experiences, educational qualifications, perceived obstacles, digital proficiency, attitudes, comfort levels, and aspirations regarding technology and digital skills. In addition, informal assessment methods are employed including observing participants' daily challenges (e.g. in accessing government services) and adapting content accordingly. Initial sessions often serve as informal assessments, and ongoing feedback is gathered through classroom interaction and practical exercises. While effective, one participant noted a lack of direct enquiries about needs, highlighting the importance of combining informal insights with more structured approaches.

The trainer also noted that some participants may grapple with feelings of anxiety or scepticism, often due to prior encounters with online fraud, closed accounts or an insufficient level of technical support. In addition, some individuals may encounter cognitive challenges associated with ageing that necessitate tailored educational strategies, including extended instructional periods or visual and tactile learning techniques to enhance comprehension.[26]

25 A study conducted with a sample of 144 middle-aged and older adults (aged 55–80) in Bahrain found that the majority (90 per cent) owned mobile phones. Ownership of other devices was significantly lower: 25.87 per cent owned computers and 9.79 per cent owned tablets. Only 6.29 per cent of participants possessed none of the electronic devices mentioned (Al Hashimi, 2021).

26 These data are gathered primarily through informal observation and ongoing interaction, rather than through formal surveys or psychological assessments. Instructors closely monitor participants' reactions during classes for signs of confusion, nervousness or withdrawal, adapting the pace and delivery of content to avoid overwhelming them. Feedback after sessions also helps to identify emotional responses

.

Once these data are analysed, the programme's content and pedagogical approach are evaluated. For instance, if a particular group possesses a foundational understanding of technology yet struggles with confidence in executing online transactions, the programme will be adjusted accordingly. This might involve adding supplementary modules focused on the safe use of online banking platforms and essential lessons on protecting one's online privacy.

Funding structures and inclusivity measures

The trainer explained that the programme's funding model is a dynamic hybrid that seamlessly blends resources from the public and private sectors. This approach makes the programme accessible to older adults from diverse socio-economic backgrounds. Government subsidies, notably from the MOSD, provide critical financial support, covering a significant portion of operational expenses. These expenses include educational materials and the fees for skilled instructors who guide participants through the learning process.

Regarding inclusivity, the Abdullah Bin Yousef-Fakhro Social Club takes specific steps to avoid economic barriers preventing individuals in vulnerable situations from participating. The programme fosters partnerships with various technology companies, aiming to secure donations of essential devices, such as smartphones and tablets, and negotiates reduced prices for older adults with financial challenges.

Finally, the trainer explained that some older learners still face difficulties in using advanced devices and applications, such as tablets or online payment systems. To address these issues, the Abdullah Bin Yousef-Fakhr Social Club is considering expanding its collaboration with tech companies and government agencies to facilitate greater access to quality devices for older adults. These collaborations help bridge the digital divide, allowing participants to engage fully in the learning experience and access the modern tools necessary for their education and personal growth.

Addressing barriers: Digital literacy gaps and accessibility

According to the literature, economic access, motivation, benefits perception, and physical or cognitive limitations are all barriers to using ICT (Charness and Boot, 2009; Ferreira *et al*., 2015; UNECE, 2021). Some of the individuals attending the social club have not had the opportunity to engage with technology until later in life, resulting in a knowledge gap. To address this issue effectively, the programme emphasizes instructing basic technological skills and cultivating participants' confidence in exploring and interacting with various digital tools. Furthermore, 70 per cent of the attendees of the social club are women, a population segment that has higher illiteracy rates in MENA countries (Roudi-Fahimi and Moghadam, 2003). A sample of 411 elderly patients attending primary health centres in Bahrain, between 29 June and 31 August 2021, showed that 35.1 per cent and 10.6 per cent of females and males, respectively, were illiterate (Bahram *et al.*, 2022).

As well as being adapted to be accessible to people with different abilities and educational backgrounds, the programme content incorporates aids such as English-to-Arabic translations, video subtitles and large-print materials for the visually impaired. Free transportation services are also offered to collect older learners from their homes. This approach facilitates the development of practical skills and cultivates a genuine interest in technology, empowering older adults to navigate the digital world with confidence (Bakshi and Bhattacharyya, 2021; OECD, 2019b).

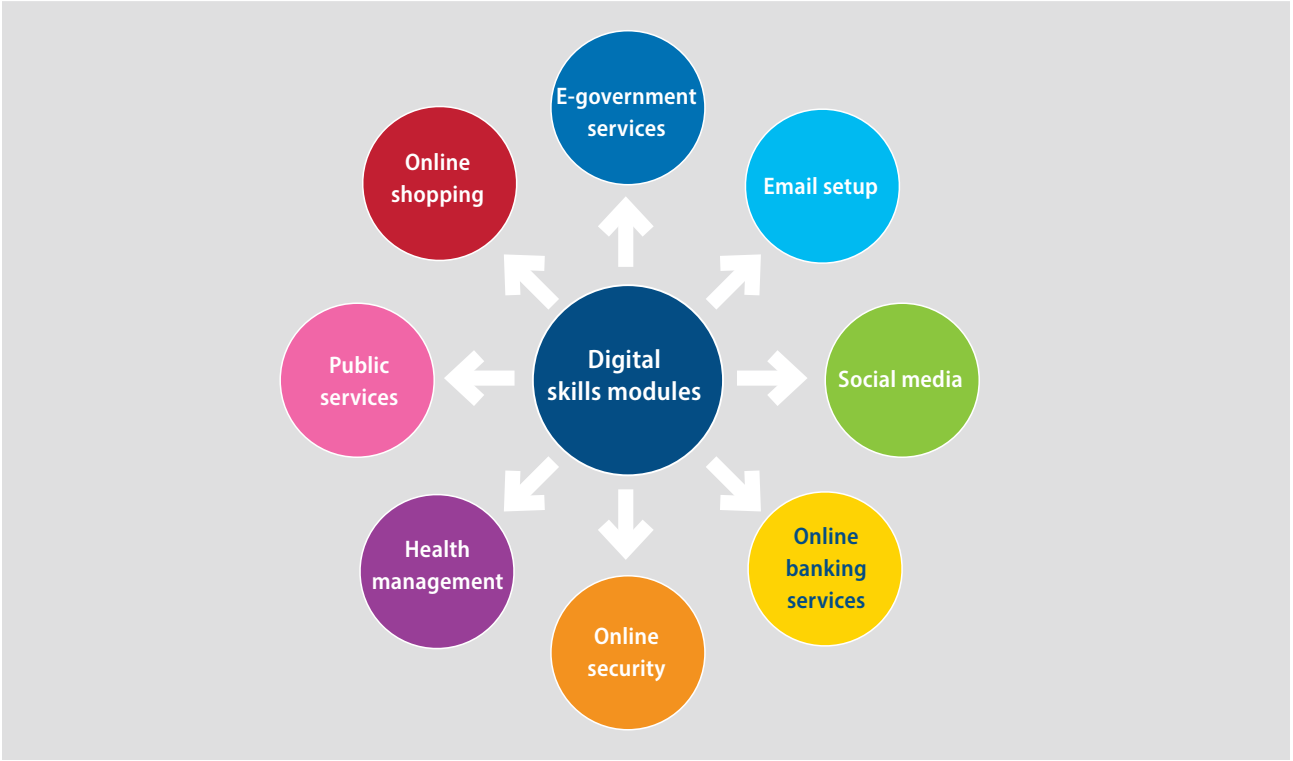
Curricular content, teaching strategies and facilitator roles

The approach used by the Abdullah Bin Yousef-Fakhr Social Club seeks to confront and overcome cultural and psychological barriers that hinder adoption of new technologies, promoting a proactive attitude and confidence in the ability of older adults to learn and adapt. Crucially, it recognizes the importance of teaching online security, as tools like email and other digital platforms expose older adults to risks of fraud, hacking and scams. Emphasizing digital safety awareness, such as regularly changing passwords (including two-step verification and registration processes) and avoiding fraudulent emails, highlights the importance of ongoing education in protecting against technological risks.
The programme also provides strategies for protecting online banking accounts and safely submitting passport renewals, driving licences and credit cards online.
In addition to cyber security, the programme focuses on technological applications used by older adults on daily basis, aligning itself with situated learning perspectives (Mitzner *et al.*, 2010; Sandhu, Damodaran and Ramondt, 2013). **Figure 7.2** presents the modules of the entire curriculum.

The modules include setting up an email account, managing privacy settings on social media, using online banking services, and accessing basic electronic authentication keys (eKey 2.0) or eGovernment services (MyGov) for medical and banking purposes. The main content consists of instructions on using applications for health management, online shopping or accessing digital public services, which helps participants view technology as a tool in their daily lives.

Recognizing that many older adults may be unfamiliar with emerging technologies, the Abdullah Bin Yousef-Fakhro Social Club uses traditional and digital channels to reach this group. These include in-person meetings at community centres, phone calls and messages through social media platforms such as WhatsApp and Instagram, tailored to the participants' varying levels of technological literacy.

FIGURE 7.2 Digital skills content curriculum



Source: Authors' elaboration

Through practical activities and interactive sessions, the programme offers participants a structured learning environment designed to support their engagement and learning needs. The curriculum is designed to encourage individuals to progress at their own pace, allowing each participant to advance at a comfortable and manageable level.

One important challenge, highlighted by the trainer, is the gap between the educated and the uneducated, which often takes the form of lack of formal university education. She pointed out that, in some cases, instruction is better received when accompanied by 'gestures' and noted that pitching the sessions at the appropriate level was essential to ensure the participants understood even 20 per cent of the relayed information. Key approaches include verbal communication as a first step, followed by the use of social media programmes such as WhatsApp or Instagram, which enable the participants to receive real-time instructions or quickly resolve queries. The two interviewed learners added that for individuals who feel hesitant to engage with technology independently, the social club takes measures to involve family members and caregivers. These trusted individuals function as vital intermediaries, offering encouragement and support to foster participation.

The trainer also mentioned that the Abdullah Bin Yousef-Fakhr Social Club hosts specific days for informational sessions, where skilled facilitators showcase the practical applications of technology in everyday life. These sessions help demystify technology, allowing participants to experience first-hand how applications can enhance their daily activities and overall quality of life. Emphasis is placed on the role of smartphones in allowing older adults to stay in touch with their family members and manage medical appointments.

Facilitators also provide content reflecting their participants' interests, motivating and inspiring them to engage in learning and acquire new skills. One of the learners interviewed recalled the patience, adaptive approach and understanding shown by the facilitator in adjusting the pace and language of the training and was able to reenact the step-by-step guidance they had received (Grynova, Khimchuk and Szymczyk, 2020; Mubarak and Suomi, 2022).

Facilitators' responsibilities extend beyond merely delivering the content; they are also tasked with cultivating an environment where older learners feel at ease and fully supported. To achieve this, the Abdullah Bin Yousef-Fakhr Social Club invests in comprehensive training to equip their facilitators with the skills needed to adopt a flexible and adaptive teaching approach. The trainer noted that different individuals exhibit varying

rates of understanding and adaptation to new concepts, particularly regarding technology. Some may take more time to fully grasp new ideas, while others easily embrace these innovations: 'By recognizing these differences', she explained, 'we can create a more inclusive and effective learning environment that benefits everyone'.

Finally, peer learning, which can be considered a form of informal mentoring, is highly valued within this context. Although a formal, structured mentoring programme is not active, interactions among participants, as well as observations from the trainer, indicate that mutual support is an essential component of the learning process. The female learner described how she had supported other participants during technology classes and noted that the instructor encouraged mutual assistance. The MOSDHead of Section also recognized the intrinsic value of older adults teaching one another.

Intergenerational learning approach

Recent studies indicate that internalized negative age stereotypes could contribute to technophobia in older adults, and that intergenerational learning is pivotal in dismantling them (Xi, Zhang and Ayalon, 2022). However, in light of the deep respect for older people and lower levels of ageism and anxiety about ageing in Bahrain (Bergman, Bodner and Cohen-Fridel, 2013; Kronfol, Rizk and Siba, 2015; Sibai and Yamout, 2012), the Abdullah Bin Yousef-Fakhr Social Club aims to offer volunteer opportunities at universities and training centres for community engagement.

The MOSD highlighted ongoing efforts to collaborate with higher education institutions to provide resources and training opportunities for older adults. This dynamic engagement enriches the lives of older participants, helping them to navigate the digital landscape while providing young people with invaluable insights. Through these interactions, younger generations cultivate empathy and a profound understanding of the experiences of previous generations, nurturing social cohesion, encouraging active community involvement and breaking stereotypes (Jarke, 2021; Tyler, De George-Walker and Simi, 2020).

The trainer noted that the Abdullah Bin Yousef-Fakhro Social Club also actively combats ageism through a respectful and inclusive learning environment, valuing the experiences and knowledge of all participants. Emphasis is placed on the abilities and learning potential of older adults, rather than their limitations. Recognizing that many participants have substantial education and professional experience, the Abdullah Bin Yousef-Fakhro Social Club encourages trainers to adopt strategies that acknowledge, value and share the knowledge and experiences of older adults, for example by publicly celebrating their accomplishments, while offering practical, accessible learning materials that avoid jargon.

Older learners who were interviewed emphasized the importance of not relying on their children to perform digital skills tasks. As one participant explained, 'A person must try. Sometimes you go to places where your children are absent, and you must rely on yourself.' The other adult learner reflected on the contrast between his children's continual exposure to technological learning and his own learning experiences. He noted that his contributions to the family often come through sharing insights gained from regular educational discussions in other domains. Both learners emphasized the technological gap between generations: 'Now, maybe my son, he is young, maybe 11 years old, he can do it... I cannot. My daughter […] is learning something new every day [...] Yes, you feel the gap has become really big.'

7.5 Evaluation and impact assessment: Learners' voices

The Abdullah Bin Yousef-Fakhr Social Club's dynamic feedback system utilizes post-training surveys and regular interviews with participants and their families to understand the programme's impact on their lives. One week after training, participants complete surveys with open-ended questions, such as: 'What did you benefit from? What do you like about the programme? What did you not like in the programme? Is the programme easy? Did you experience any difficulties?' This approach allows for comprehensive evaluation of the skills acquired during training sessions, highlighting specific areas that may require additional focus or improvement. In addition to this follow-up evaluation by the instructor, the administration conducts annual and semi-annual monitoring and assessment of the institution. This includes observing how older adults engage with the programmes and the benefits they derive in their daily lives.

Older adults have demonstrated significant enthusiasm for digital technology programmes, as well as a readiness and willingness to learn. Interviews also show that they reflect positively on retirement, one learner describing it as 'a new stage [of life]', indicating that they view older adulthood as an opportunity for continued personal growth.

Studies by Ferreira et al. (2015) and Llorente-Barroso et al. (2022) reveal that the ability to use ICTs promotes emotional well-being, a sense of belonging and empowerment. Corresponding with this finding, the impact of the social slub has been shown to improve participants' self-esteem, autonomy and social engagement in several ways:

- enhancing empowerment and self-esteem;
- promoting independence and self-sufficiency;
- reducing isolation by integrating older adults into the broader community;
- increasing awareness aware of technology's practical relevance and the importance of digital literacy for avoiding online fraud.

7.6 Conclusion

Bahrain is moving toward a more equitable and resilient society, focusing on developing digital skills among its ageing population, with the MOSD as a central actor. This transformation is rooted in a comprehensive policy structure grounded in clear legal mandates (the Rights of Older People Law No. 58 of 2009) and robust digital infrastructure (Chu *et al.*, 2022; OECD, 2019b). This qualitative study presents a case of a coordinated multi-stakeholder approach to digital inclusion involving public institutions, private companies, universities and civil society organizations, reflecting growing recognition of the need for integrated approaches to ageing policy and practice.

The participants interviewed for the case study explicitly rejected the perception that older adults are unable or unwilling to learn new skills, a view that aligns with the Institute for Prospective Technological Studies (European Commission, 2008), which advocates for older adults to continue growing intellectually and socially.

According to Charness and Boot (2009) and Friemel, Frey and Seifert (2021), needs assessments play a central role in designing effective programmes. They allow for customizing content to meet the specific needs of older learners, making the content relevant and practical (Mitzner *et al.*, 2010; Sandhu, Damodaran and Ramondt, 2013). The digital workshops at the Abdullah Bin Yousef-Fakhr Social Club frequently employ such assessments and are built upon a foundation of carefully adapted teaching methods that reflect implicit cultural sensitivity and effective practices for the older demographic. The approaches are grounded in respect for older adults, local learning norms, and social values that emphasize dignity, patience and mutual support:

- Teaching is conducted in person to include participants with limited literacy or digital skills. Practical, device-based instruction enables immediate application, often supported by projectors and visual aids.
- Content is introduced slowly and in small stages, acknowledging that older learners require more time to absorb new information. More complex topics are avoided at the beginning.
- Courses are translated into Arabic, and familiar technologies are prioritized to reduce barriers and build confidence.
- Instructors adapt to learners' pace, avoid formal assessments, and offer repeated explanations to support comprehension and self-esteem.
- Participants often assist one another, creating a cooperative learning environment that reinforces shared cultural values.
- Instructors are valued not just for their knowledge, but also for their ability to relate to older adults, particularly through their pedagogical skills and empathetic style.

These methods are pedagogically appropriate and culturally relevant, as they reflect the social norms and learning preferences commonly observed among older adults in Bahrain. At institutions such as the Abdullah Bin Yousef-Fakhr Social Club for Parents, programmes can empower cognitive skills and promote social and economic engagement. This approach follows the community-based ICT programmes model, outlined by Biehl *et al.* (2021). Prioritizing access for older adults in local community centres also fosters social participation (Ferreira *et al.*, 2015; Llorente-Barroso *et al.*, 2022), while incorporating peer learning and collaborative teaching creates a supportive environment for learners to gain confidence in their abilities without fear of inadequacy (Ali *et al.*, 2025).

The curriculum emphasizes practical digital skills essential for integrating older adults into the digital economy (Vercruyssen *et al.*, 2023), with additional emphasis on teaching digital safety. The facilitators adapt teaching methods to accommodate diverse learning styles, helping ensure that all older learners can engage effectively with the content (Grynova, Khimchuk and Szymczyk, 2020; Mubarak and Suomi, 2022).

Despite various challenges, these programmes ensure more equitable access through government support and community engagement. They address challenges to digital inclusion identified in the literature (Aburukba *et al.*, 2021; Alsulami, 2019; Biehl *et al.*, 2021), including financial constraints and lack of access to necessary tools. By providing transportation, accessible formats and ongoing, step-by-step instruction, these initiatives help create practical pathways for older adults to enhance their digital skills (Bakshi and Bhattacharyya, 2021; OECD, 2019b).

Limitations of the case study

While participant feedback was largely positive, responses may reflect social desirability bias (Alhur *et al.*, 2023), particularly given the face-to-face nature of interviews and the institution's affiliation with the implementing organization. Additionally, interviewees self-reported an association between programme engagement with

a perception of psychological improvements; however, conclusions regarding causality cannot be made without a clinical evaluation (Liu and Li, 2024). In this regard, Chalghoumi et al. (2022) noted that research methods developed in Western contexts may not be suitable for documenting ICT access and use among older adults in the Arab region, due to specific cultural considerations. Factors such as concerns around privacy, gendered communication norms, and the familial tendency to protect older individuals may undermine the quality and relevance of the data collected. Therefore, to generate accurate and robust evidence on the psychological impacts of ICT use, research methodologies must be sensitive to these cultural particularities.

Despite strong institutional support, the long-term sustainability of these initiatives remains uncertain. Continuation will depend on sustained political resolve, resource allocation, and the distribution of centres throughout the governorates to ensure that older adults have equal access to digital learning opportunities and ongoing support. Bahrain, as a member of the Gulf Cooperation Council (GCC)[27] shares in the region's broader push towards digital transformation and inclusion.

GCC countries are currently pursuing digital strategies that incorporate digital inclusion as a core component. Qatar, for example, has emphasized the importance of accessible digital services for healthy ageing (Chalghoumi *et al*., 2022). At the same time, Saudi Arabia, through its Vision 2030, has launched a range of efforts aimed at enhancing citizen-centred digital services, improving infrastructure and integrating older adults into the digital landscape (Government of Saudi Arabia, 2025). Dubai, in the UAE, is recognized as a global leader in government digitalization, with a vision to become the world's first paperless government by 2021 (Government of Dubai, 2025). The UAE also regularly updates its government services to reduce the digital divide (UAE Government, 2025). While these efforts mark substantial progress, their long-term success will require sustained commitment and adaptability to evolving demographic and technological needs.

Given the projected rise in the population aged 65 and over, such programmes are both timely and necessary, as Mubarak and Suomi (2022) suggest, and must successfully target the population's needs to overcome the 'grey digital divide'. Looking ahead, it will be important to consider implementing gender- and evidence-based systematic data gathering and analyses to report the motivations, skills gains and outcomes of programmes, as described in ICT literature frameworks (Bakshi and Bhattacharyya, 2021; OECD, 2019a; WEF, 2021b; Zhang *et al.*, 2019).

27 The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (www.worldbank.org/en/country/gcc).

8. Conclusion

Virginia Rodés-Paragarino[28]

This report synthesizes six case studies of lifelong learning programmes, across different regions, that address the grey digital divide, understood as the socio-technological exclusion of older adults from digital spaces due to age-related, infrastructural, economic and cultural barriers (Abbey and Hyde, 2009; WHO, 2022b). The grey digital divide reflects a broad spectrum of exclusion rooted in generational inequalities that hinder or block access to education, infrastructure and opportunities for meaningful technological engagement (UNECE, 2021). Digital exclusion exacerbates existing social isolation, limits access to vital services such as e-health, banking and government information, and undermines older adults' capacity to engage in civic and cultural life (Bakshi and Bhattacharyya, 2021; Xie *et al*., 2020). This report contributes to a growing body of research on active ageing and digital citizenship, contextualizing the experiences of older adults in evolving national and institutional frameworks (WHO, 2002).

Using data from the case studies discussed in this report across six contexts, this analysis explores how various institutional and societal actors operationalize lifelong digital learning opportunities for older adults. Anchored in a conceptual framework informed by research on ageing, ICT adoption and adult education (Carlo and Bonifacio, 2020; Castro Rojas, 2021; Wolfson, Cavanagh and Kraiger, 2014), this synthesis reveals cross-case patterns and contextual specificities. It aims to inform policy, practice and future research by exploring diverse strategies, learner profiles, pedagogies, and structural enablers and barriers related to the digital literacy of ageing populations.

This section presents analytical syntheses of five dimensions from the literature and data from the case studies: (i) policy context, (ii) institutional configuration, (iii) pedagogical design, (iv) learner profile and needs, and (v) impact and sustainability. These dimensions emerged from inductive cross-case analysis, reflecting systemic and experiential factors affecting digital inclusion in later life.

8.1 Policy environments: Global pathways toward digital equity in later life

National and regional policy frameworks are foundational to shaping the digital opportunities available to older adults. These policies determine not only funding structures and institutional roles but also the normative orientation of digital learning, whether older adults are approached as passive recipients of welfare, active learners or contributors to society. The literature demonstrates that without comprehensive policy support, digital inclusion remains fragmented and short-lived (UNECE, 2021; WHO, 2002).

From the case studies discussed, it is evident that in some contexts, municipal governments play a leading role in delivering digital learning opportunities, drawing on supportive national or supranational policies. For instance, regional authorities (*voivodeships*) in Poland draw on EU-level strategies and the national *Social Policy for Older Persons 2030: Security – Participation – Solidarity* to create tailored local initiatives. Some examples include the Lesser Poland Voivodeship's Silver Lesser Poland Programme and Krakow City Office's *Municipal Programme for Social Activity and Integration of Older Adults* (PASIOS) 2015-2020. The City of Krakow's initiative to build Senior Activity Centres has also more recently been included as a priority area in the PASIOS programme. Similarly, in China, the municipal government of Shanghai established the Shanghai University for the Senior (SUS) as early as 1985. More recently, the 14th Five-Year Plan in China has explicitly addressed concerns around population ageing, which fosters a supportive policy environment for municipal government initiatives such as SUS to thrive and expand.

In Bahrain, state-licensed infrastructure built specifically for older adults is expanded in scope to also serve as learning spaces. Specialised parent day care spaces, called social clubs, offer digital literacy programmes for older adults across the island's four local governorates. In the United States, digital inclusion for older adults takes place within a decentralised policy landscape. While a range of federal initiatives support broadband access and technology training, there is no single national

28 Institute for the Future of Education, Tecnológico de Monterrey, and EGADE Business School, Monterrey, Mexico

programme that provides digital skills training for all older adults. In this context, non-profit organizations such as OATS from AARP play a central role, delivering more than half of digital inclusion services and relying on competitive grants and partnerships with state and local ageing offices.

In Chile, although policy and governance are centralised and national-level policies supporting older adult learning exist, a national strategy for digital learning for older adults is yet to be established. The Conecta Mayor Foundation, as a project of Pontificia Universidad Católica de Chile, steps in here, working with municipal governments and private donors – such as telecom companies – to deliver digital skills programmes and devices specially designed for older adults. South Africa's goGOGOgo project, too, is an example of a non-profit actor that works with private partners and external funders to deliver basic digital skills learning for older South African women. While it does not directly work with the government, its mission builds upon and complements the efforts of local government bodies such as the South African Local Government Association (SALGA), which has put the *Yabelana* tech-based information sharing ecosystem in place for South African seniors.

Across all the cases, digital learning programmes for older adults are affected by the diverse policy environments and governance frameworks in which they operate. While these initiatives demonstrate positive outcomes through various implementation approaches, those led by civil society actors often rely on multi-level coordination and cross-sector partnerships to secure and maintain funding and resources. In this context, the establishment of formal national strategies and policies for digital learning targeting older adults may provide clearer guidance to stakeholders concerning the nature and scope of learning provision, while also facilitating fundraising efforts and enhancing the efficiency of resource allocation.

8.2 A diversity of institutional settings as providers of ICT learning for older adults

Institutional settings refer to the type, capacity and strategic orientation of the organizations that lead or host ICT programmes for older adults. They form a critical link between national or municipal policy frameworks, pedagogical practices and the lived experiences of older learners. Universities, non-governmental organizations, municipal agencies and community centres offer diverse operational models shaped by resource availability, stakeholder networks and underlying mission priorities.

The case studies in this report reveal a wide range of institutional arrangements. China's Shanghai University for the Senior is a dedicated adult learning institutions which directly benefit from the infrastructure, staff, and funding channels of its parent university.

Another group of cases pertain to non-profit organizations that emerge with the support of various public and private actors, such as the OATS/Senior Planet in the United States, the Conecta Mayor Foundation in Chile, and the goGOGOgo initiative in South Africa. All three cases involve civil society actors and demonstrate how a diverse combination of funding and recourses sources – including government funding, grants, support from universities, and private sector partnerships – can sustain digital learning initiatives for older adults.

While these funding sources can be relatively short-term and variable, posing certain challenges, all three organizations have successfully leveraged cross-sector partnerships and community or volunteer networks, demonstrating resilience and the ability to sustain their initiatives. Partnerships with telecom companies ensure adequate access to devices in South Africa and Chile, and in the case of the US, licensed delivery partners enable a wider geographical reach of the OATS programme. The final group of cases pertain to community learning centres that are overseen by state or local government bodies, such as SACs in Poland and social clubs in Bahrain. These are further strengthened through community partnerships and the recruitment of trained staff and younger volunteers who bring in the intergenerational aspect to learning at the community centres.

Monitoring and evaluation mechanisms too vary across institutions. At Conecta Mayor Foundation, evaluation is based on qualitative feedback from trainers and learners, along with small-scale external studies. Senior Planet uses more structured methods, including surveys, to better identify needs and report to funders. SUS operates a dedicated monitoring and research platform that collects data on learning behaviours and needs to inform programme design. In state-led initiatives, such as those in Bahrain and Poland, regular municipal-level review meetings are held to assess programme implementation and impact.

8.3 Adaptive pedagogies: Responding to the needs of older digital learners

Regarding pedagogy for older learners, the literature consistently highlights approaches such as participatory learning, gentle scaffolding, peer mentoring and learner autonomy (Carlo and Bonifacio, 2020; Wolfson *et al*., 2014). Technological adaptation, too, remains a critical

factor, as accessible and intuitive digital devices are necessary implements in fostering a supportive learning environment. Across the case studies, pedagogical strategies for digital inclusion vary and are shaped by institutional models, learner demographics and the availability of appropriate technologies. Nonetheless, these programmes share a common objective: to foster inclusive, emotionally safe, and trust-building learning environments tailored to older adults' physical and cognitive needs.

In structured institutional settings such as SUS, pedagogical design follows a curriculum-based, instructor-led format. SUS incorporates both online platforms and in-person instruction, supported by user-friendly devices and assessment tools that personalize content. Grassroots and community-led initiatives such as goGOGOgo in South Africa and Senior Activity Centres in Poland emphasize non-formal and relational learning. These programmes frequently employ peer-led or volunteer-supported formats.

The OATS/Senior Planet model in the United States provides structured thematic workshops in interactive community clubs that reinforce experiential learning. Many sessions are intergenerational, with younger facilitators guiding older learners through digital environments. These practices often encourage empathy and challenge ageist stereotypes by encouraging reciprocal learning (Carlo and Bonifacio, 2020).

In Chile, Conecta Mayor supports municipalities in distributing user-friendly smartphones designed specifically for older adults. The pedagogical model focuses on simplicity and utility: devices feature large icons, voice activation and pre-installed applications. Learning is facilitated through a combination of telephonic guidance and face-to-face workshops, particularly in underserved areas. This approach reflects broader trends in gerontechnology design, which emphasizes usability and functionality over complexity (WEF, 2021a).

In Bahrain, instruction is typically offered through small groups or one-on-one tutoring at senior centres. Facilitators often assist learners in navigating smartphones, mobile applications and e-government platforms. This hands-on, personalized format is well suited to individuals with limited literacy, mobility challenges or sensory impairments (UNECE, 2021).

8.4 Understanding older learners: Profiles, inequalities and motivations

Understanding older adult learners' diverse profiles and needs is central to designing effective digital inclusion strategies. The cases in this synthesis demonstrate the heterogeneity of this population in terms of age, gender, education level, income, health status, urban-rural residency, caregiving responsibilities and prior technological exposure. Many of the participants face multiple diverse barriers – structural (lack of device and internet access), cognitive and affective (declining cognitive facilities, fear of technology, lack of confidence), and cultural (such as ageism), which also inhibit participation. This diversity of learner profiles, motivations and barriers to learning necessitates flexible pedagogical and institutional approaches capable of responding to both structural inequalities and personal motivations.

Demographically, the analysed programmes engage learners primarily aged 60 and above, although in some cases, such as SUS and OATS, the entry age begins at 50. In South Africa, most participants are older women who are often caregivers in multigenerational households. Their learning is motivated by the desire to support younger family members in schooling, health or economic activities. For example, township grandmothers use mobile phones to communicate with schools, monitor health care and conduct mobile banking.

Participants in Shanghai tend to be younger retirees, often with some secondary or tertiary education, seeking to maintain autonomy and cognitive engagement. In Bahrain, older adults' motivations include building the ability to manage health records, interact with e-government services and connect with family members abroad, particularly in the context of widespread diasporic ties. Krakow's older adults tend to have moderate digital familiarity but need structured, supportive environments to learn the skills required to deal with rapid technological changes and bureaucratic systems.

Learners' identities as grandparents, workers, retirees, volunteers or migrants intersect with digital learning goals. Most of the programmes integrate these identities into the learning experience, encouraging storytelling, photo sharing or online participation, tapping into intrinsic motivation and generating higher levels of engagement. Programmes design and delivery also recognize the diverse motivations that drive older adults to engage in digital learning. Participant motivations can be broadly categorized as instrumental, affective, social and emancipatory (Brookfield and Holst, 2011). Instrumental motivations are to acquire practical banking, communication and health management skills. Affective motivations relate to self-confidence,

overcoming technophobia and psychological well-being. Social motivations include combating loneliness and participating in intergenerational learning, while emancipatory motivations reflect aspirations for social change, civic engagement and economic self-determination. This multidimensional understanding of learner motivation informs both pedagogical approaches and content relevance in the initiatives.

8.5 Impact and sustainability

The impact of digital inclusion programmes on older adults extends beyond individual skills acquisition. These initiatives can foster psychosocial well-being, enhance civic and social participation, and contribute to more inclusive and resilient communities. The six case studies display a range of short- and long-term outcomes, each shaped by the interplay of policy frameworks, pedagogical approaches, learner needs and institutional support within a broader socio-cultural context.

At the individual level, participants report increased confidence, reduced anxiety toward technology and more autonomy in managing daily tasks. In Bahrain, older adults use ICT to access medical appointments, navigate e-government platforms and maintain contact with relatives abroad, reducing dependence on younger family members. In South Africa, grandmothers involved in goGOGOgo enhance their caregiver capacity by using digital tools to communicate with schools and clinics.

The psychosocial benefits are equally profound. Many learners report feelings of empowerment, belonging and cognitive engagement. In Poland and the United States, participation in digital literacy programmes fosters social inclusion and a renewed sense of purpose. In Shanghai, learners engage with ICTs for functional purposes, including intellectual and social enrichment, contributing as peer mentors and community facilitators. These experiences affirm that digital participation can be transformative in later life, promoting agency, connectedness and a positive sense of self (Wanka and Gallistl, 2018; Wolfson *et al*., 2014).

At a societal level, these programmes disrupt deficit-based narratives that associate older age with disengagement. Instead, they highlight older adults as contributors to digital cultures and intergenerational knowledge exchange. Initiatives in China, Poland and the United States promote reciprocal intergenerational learning, supporting mutual respect and reinforcing social cohesion. This contributes to emerging perspectives that view later life not as a withdrawal phase but as a period of active contribution and personal reinvention.

However, sustainability remains an ongoing challenge. The continued viability of such initiatives often depends on a combination of factors. Strong political will, active community engagement, and a supportive policy environment are essential first steps toward ensuring sustainability.

A further constraint is the lack of formal recognition of older adult education. Without micro credentials or clear progression pathways into civic or economic participation, digital inclusion may remain confined. Recognition systems can enhance learner motivation, institutional accountability and policy visibility. As highlighted in the literature, sustainable impact depends not only on learning's accessibility but also on its embedment in the structural ecosystem (Beblavý and Bačová, 2022; Xie *et al*., 2020).

Finally, monitoring and evaluation must evolve beyond input-output metrics (e.g. devices distributed or sessions completed) to include qualitative outcomes such as confidence, empowerment and digital engagement. Participatory evaluation practices, where older learners co-assess programme relevance and outcomes, are particularly valuable for embedding user agency and ensuring responsiveness (Carlo and Bonifacio, 2020).

8.6 Responses to the research questions

In addressing the research questions, the study integrates case-specific insights with cross-cutting themes including demographic pressures and policy responses, institutional configurations, digital empowerment, socio-technical adaptations, sustainability challenges and multi-stakeholder ecosystems. These dimensions, drawn from synthesizing empirical data and relevant literature, provide a multidimensional understanding of how digital inclusion in later life contributes to both individual and systemic transformation.

Key factors contributing to a supportive policy environment for digital inclusion

The cases show that holistic national strategies for implementing digital learning initiatives not only provide valuable guidance to municipal governments designing learning programmes but also foster an enabling environment that facilitates stakeholder alignment, funding opportunities and the scaling up of successful initiatives.

In settings that are more decentralized, or in regions where national strategies have yet to be established, local governments and civil society actors can step in with tailored policies and programmes. Despite their

smaller scope, these initiatives can be highly focused and impactful. Strong partnerships with private companies, educational institutions and local volunteers are crucial to ensure that these efforts remain well-resourced and sustainable.

Across all contexts, an underlying requirement is a shared sense of urgency among stakeholders to support older adults' digital literacy. This sense of urgency can be reinforced through targeted research and funding focused on ageing populations, helping to strengthen both policy visibility and practical implementation.

Ageism in digital learning and mitigation strategies

Ageism in digital contexts appears explicitly through societal narratives that depict older adults as incapable of learning new technologies and implicitly through top-down design choices, instructional pacing and exclusionary practices. In all cases, programmes address ageism by normalizing older adult participation in digital life and promoting positive representations of ageing, portraying older adults as autonomous learners and contributors to society. Pedagogical strategies with individualized pacing, emotional safety, culturally sensitive instruction and peer mentoring further mitigate internalized ageism and foster learner confidence.

Developing confidence and competencies in older digital learners

Digital self-efficacy, relevance to daily life and trust in technology are consistently identified as essential for older learners. Their confidence grows through sustained exposure, context-specific learning and emotionally secure environments. Learners benefit most when programmes link digital skills to meaningful outcomes, such as accessing telemedicine or staying connected with family. Programmes in Bahrain and South Africa demonstrate that digital confidence increases when instruction is relevant to learners' caregiving roles or daily routines. Instruction employing patience, relational pedagogy and adaptive tools tailored to physical and cognitive capacities are emphasized across all cases.

Institutional and pedagogical determinants of effective implementation

Successful interventions are characterized by multi-sectoral partnerships, responsive pedagogy and embedded evaluation mechanisms. Effective strategies include modular learning formats, intergenerational engagement and consistent support from trained facilitators. Sustainable funding, clear governance structures and alignment with community needs further strengthen programme outcomes.

Strategies for equitable access and inclusive, needs-based programme design

The programmes highlighted in this report adopt diverse delivery methods to promote equitable digital access. For example, Chile's Conecta Mayor Foundation and South Africa's goGOGOgo provide learners with tailored digital devices. All programmes also optimize available resources and infrastructure while aiming for the broadest possible reach. In Bahrain, for example, the MOSD has created a network of parent day care centres, or social clubs, offering digital learning spaces for older adults. goGOGOgo targets underserved women through multiple training centres across South Africa. Krakow continues to expand its Senior Activity Centres (SACs) and volunteer network, with many established over the past decade. In the US, Senior Planet/OATS licences partner sites nationwide, extending access beyond its main centres. In Shanghai, the SUS expands campuses and promotes 'borderless learning', including for the Chinese diaspora. Tailored recruitment and removing participation costs further engage marginalized groups, such as older women, rural residents and persons with disabilities. Content and delivery are also adapted to older adults' specific learning needs and intersecting inequalities such as gender, education, income and location. South Africa's iGOGO programme focuses on basic digital skills for low-literate, low-income older women. Bahrain offers culturally responsive, personalized instruction in local communities. Chile's Conecta Mayor Foundation ensures digital devices are intuitive and easily navigable. Across all cases, inclusive curricula, subsidized access, culturally relevant materials and trust-building mechanisms support reaching and retaining underserved populations.

Addressing learning through non-formal education and informal learning

Non-formal and informal learning environments offer the necessary flexibility for older learners. Community centres, peer-led workshops and online classes accommodate diverse schedules, abilities and motivations. Programmes adopt geragogical principles, emphasizing respect for prior knowledge, hands-on practice, iterative learning and emotional safety. Informal learning, often mediated through family members or social networks, supplements structured instruction and could contribute to the development of digital confidence and relevance.

Functional and well-being outcomes of digital skills interventions

Digital inclusion facilitates access to essential services, particularly in health, finance and communication. In Bahrain and China, participants use ICTs to manage health records and appointments. Chile and the United States employ digital communication tools to reduce isolation, while South Africa supports intergenerational caregiving and community education.

Poland's CAS centres promote civic participation and local engagement. These benefits extend beyond technical competency, contributing to autonomy, dignity, community well-being and economic resilience.

Societal benefits of older adult digital inclusion

When effectively designed and implemented, digital literacy programmes contribute to societal cohesion, intergenerational solidarity and inclusive development. They can reduce structural inequalities, reframe ageing as a growth stage, and reinforce older adults' status as civic participants and community contributors. Moreover, these initiatives support broad goals related to digital democracy, health equity and lifelong learning. Programmes in all regions demonstrate that empowering older adults as digital citizens yields individual gains and collective resilience.

8.7 Conclusion

This comparative synthesis of six diverse case studies highlights context-sensitive principles in practices and institutional innovations, offering strategic priorities for advancing the digital inclusion of older adults. The cases illustrate how tailored programmes, inclusive curricula and culturally responsive approaches can effectively engage older learners and expand digital access, even under varying local conditions.

The six cases also show that digital learning programmes for older adults can be implemented by a variety of actors – educational institutions, non-profits, private organizations, local governments or community groups – but adopting a multistakeholder approach enhances their effectiveness. By collaborating across sectors, programmes can leverage diverse resources, reach more learners, adapt to local contexts and remain responsive to older adults' needs, while also strengthening sustainability and alignment with broader policy priorities.

Embedding participatory design is equally critical, as co-creating initiatives with older adults enables relevant, culturally appropriate and empowering learning. Intergenerational models further support community cohesion and learner confidence.

Technological accessibility remains a cornerstone. Simplified devices, multilingual tools and mobile-first approaches demonstrate that user-friendly, affordable and adaptable technology is essential for meaningful engagement. Equally important is capacity-building for facilitators. Well-trained staff and volunteers are critical, and professional development, peer mentoring and intergenerational approaches should be institutionalized to ensure high-quality delivery.

Sustainable implementation requires addressing funding and evaluation challenges. Short-term, donor-dependent models risk programme fragility, whereas combining public, private and community resources increases resilience. Participatory and formative evaluation, alongside data-driven models, enable real-time learning, strategic planning and assessment of empowerment, inclusion and well-being. Digital learning for older adults must also link to broad development agendas. Whether facilitating health access, financial autonomy or civic participation, digital learning programmes need to reinforce the use of ICT tools to support active ageing, social justice and human dignity.

In conclusion, digital inclusion in later life is not solely about access. When older adult learning is co-designed, locally embedded and supported by multistakeholder collaboration, it promotes autonomy, combats ageism and reimagines older age as a time of growth and contribution. Nevertheless, the grey digital divide remains widespread, reflecting persistent structural inequalities, policy fragmentation and limited recognition of older adults' diverse needs. Addressing these gaps requires sustained cross-sector collaboration, long-term policy commitment and recognition of older adults as lifelong learners and digital citizens.

Investment in inclusive, participatory and resilient learning ecosystems will help to ensure that older adults are not passive recipients but active co-creators of an equitable digital future.

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