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## **Bridging the digital divide: ICTs and older adult learners**

The emergence of new Information and Communication Technologies (ICTs) in 1990s brought with it concerns about equal access to those technologies and digital literacies. It was this time that the term “digital divide” first appeared in the USA to describe what was until then referred to as information inequality or information gap (van Dijk, 2006). In this context, the elderly have been considered as the age group with the lowest access and usage of ICTs and internet, marking an increasing gap between generations (Neves and Amaro, 2012). Today, with ICTs having penetrated all areas of life, UNESCO has recognised digital literacy as a life skill as important as traditional literacy (UNESCO, 2011, p.2). This highlights the need for educators and policy makers to address the issue of digital inclusion among older adults.

In this essay the concept and characteristics of the generational digital divides will be discussed, with a specific focus on the barriers and motivations of older adult learners in relation to ICTs. Specific examples of ICT-based educational programs aimed at senior learners from different countries are brought into discussion. It is argued that when such programs take into account the specific needs and motivations of this age group, they have the potential to bridge digital divides and contribute to lifelong learning in later stages of life.

The first use of the term digital divide was in the late 1990s by the US National Telecommunications and Information administration. It was thereon used by researchers to describe the gap between those who have and those who haven't access to new ICTs (Warschauer, 2004, p.6). However, as technology developed this gap started to shrink as new technologies became more accessible to people from a lower socioeconomic status (van Dijk, 2006, p. 225). This was not the case in the developing countries where the inequalities in physical access to ICTs kept growing (United Nations Statistics Division, 2004).

In the 21st century, the continuous development and diffusion of internet, smartphones and social media brought about a new aspect of the initial divide. This has less to do with physical access and concerns primarily the necessary skills and knowledge to be able to use the new technologies (van Deursen et al., 2011). This second digital divide thus marks the shift from accessibility to use (OECD, 2014).

When it comes to older adults as learners and users of ICTs research has shown that it is not a homogeneous group. There are various factors that affect the access and use of new technologies among this group, especially as access and use follow the pattern of existing social inequalities (Steyaert, 2002, p.200). More specifically, the richer, better educated and younger among older adults are more likely to have access and adopt new technologies compared to those with lower socioeconomic status and level of education (Smith, 2014). Binstock, Fishman & Johnson, among others, have proposed a new concept of looking into this age group, where differences are not dependent on age, but on the different phases of life (pre-retirement, independent living, start of dependent living and up to end of live) (2006). Such a differentiation is important when it comes to technology and information literacy, as younger seniors might have developed ICT skills in the workplace before retirement. They are therefore able to use new technology after they retire with greater ease than those who have not developed such skills in the workplace. However, even among those with adequate technology literacy, those with higher socioeconomic status are more likely to develop the knowledge of how to search for relevant information and make better use of ICTs (Steyaert, 2002).

Despite the heterogeneity among the older adult learners, there are specific barriers that this group faces that prevent them from accessing and using new technologies. More specifically, physical barriers, such as chronic illness and disability play an important role, as seniors who with these issues are less likely to adopt new technologies compared to the rest of older adults without such issues (Smith, 2014). Other physical barriers include limited accessibility to places with computers and internet, as well as, reduced cognitive abilities that ask for a more focused approach to learning new skills (Ala-Mutka et al., 2008). Another significant barrier concerns limited literacy skills, such as reading and writing, which are essential in order to use a computer or smartphone. This is a significant factor of the digital divide when it comes to education, as according to statistics older adult groups have higher illiteracy rates than younger adults, although this gap tends to shrink among generations worldwide (UIS, 2017). Psychological barriers are also important among older adult learners, as they feel lack of confidence and motivation when it comes to adopting new technologies. This is because they feel they do not have the necessary skills to use them and/or they doubt they need such technologies in their daily lives (Smith, 2014; Ala-Mutka et al., 2008).

When designing educational programs encompassing the digital divide, it is also important to take into account the specific needs and motivations among older adult learners. Issues such

as health and safety, as well as, learning about ageing and socialising appear to be prominent topics for learning among seniors (Boulton-Lewis et al., 2006). Other topics include learning about cultures and politics, that seem to motivate learners in order to understand the world around them. Also, learning to use new media technologies that facilitate communication with family and friends and help older adults socialise and create bonds with the local communities (Ala-Mutka et al., 2008).

UNESCO has defined digital literacy as ‘accessing, managing, evaluating, integrating, creating, and communicating information individually or collaboratively’ (2011, p. 4). When it comes to education and policies, particular emphasis is given to continuing learning among older adults, as a solution to the demographic crisis that world is facing. Concepts such as active ageing and intergenerational learning have appeared to stress the benefits of lifelong learning among older adults (EAEA, 2015). Among them, there is the argument that education can reduce the health and social expenditures, while senior citizens will be able to participate to economy for a longer period of their lives. In this context, ICTs have the potential to facilitate wellbeing, independent living, good health and work-life balance, while new technologies and interfaces assist older adults with disabilities and provide access to opportunities for information and services (EAEA, 2015; UNESCO, 1999; Ala-Mutka et al., 2008).

A number of educational programs and policies efficiently address the aforementioned needs and barriers of older adults in improving digital literacy and bridging the digital divide. Community-based approaches to ICT-related programs aimed specifically at older adults can be effective in addressing the generational gap in digital literacy. In Spain, for example, ATEGAL (Asociación Cultural Gallega de Formación Permanente de Adultos) partnered with Vodafone Foundation Spain to develop an educational program aiming to facilitate the use of mobile devices among senior citizens in an area facing demographic ageing (EAEA, 2017). In Sweden, adult learning centres offer formal and non-formal programs using ICT-supported approaches with the participation of other agents such as NGOs and businesses connecting older learners with the local communities (Ala-Mutka et al., 2008). In another example from the UK, a local charity (Age UK Camden) in partnership with the local council provides computer and internet training to older adults, including basic and more advanced courses (OECD, 2002).

Also in the USA, project LINCT is an example of cooperation between communities and corporations, where low-income families participate in the ICT educational programs as trainers or trainees and in return are provided with their own home computer on an “learn-and-earn” basis (Ginsburg, Sabatini and Wagner, 2000, p. 84). Such initiatives highlight how adult education can intervene with local communities and bridge the ICT knowledge and accessibility gap among adult learners. They also demonstrate that a link between community-based education and corporate agents can facilitate access to the necessary equipment and knowledge for older adult learners. In participating in such programs they are also able to socialise, share experiences and be supported in the learning process.

At a transnational level, too, project “EU – Broadening People’s Minds in Ageing” (EUBIA, 2010) ran for two years and aimed to co-ordinate local organisations in various European countries that ran educational projects for older adults. This initiative fostered cooperation and exchange between the various organisations and individuals, while it involved the active participation of senior adult volunteers in supporting other learners with the use of ICTs. (14)

Another educational approach that encompasses the issue of digital divides is the peer-tutor approach, where senior adults are trained to become tutors of ICT learning programs in their communities (Woodward et al., 2013). In this way, older adults are given the opportunity to actively participate as tutors in the learning process, while there is a greater outreach to the local communities. An example of this was developed by the Cyber Senior Network in Hong Kong, an area with low digital literacy among senior population, where senior adults are trained to tutor local community programs since 2001 (Freddolino et al., 2010, p. 232).

Intergenerational learning as educational approach is another way to address the issue of digital divides and ICTs. As educational approach it involves the interaction between learners from different generations, where one or both sides learn (Ropes, 2013, p.714). As research indicates, intergenerational initiatives with ICTs provide an inclusive environment and promote the cooperation and peer learning between older and younger generations (Patricio and Osório, 2016, pp. 95-96). Intergenerational learning in a community-based setting can also lead to greater digital inclusion of older adults, especially in the developing countries where access to new technologies is still a major factor contributing to the digital divides. More specifically, Bailey and Ngwenyama suggest that telecenters can provide the physical space within communities where different generations can meet and learn with the use of ICTs (2010, p. 63). This can be observed in various projects in Jamaica with the cooperation

of various national and international educational and corporate agents (Bailey and Ngwenyama , 2010, pp.65-66). Another example of this approach can be found in Bangladesh, where students who had computer skill were assisting older adults in their communities with using new technologies to facilitate farming and trade (Ali and Ahsania Mission, 2003).

Overall, the issue of digital divides is more complex than the accessibility and use of ICTs; it reflects the undermining socioeconomic patterns of societies. Education with a lifelong learning focus can effectively address the issues of inequality both in access and knowledge to ICTs. However, for such programs to be effective, it is important to take into account the heterogeneity of older adults as age group, as well as, their specific needs and barriers as learners. At an educational policy level digital divides are addressed through concepts such as “active ageing” and “intergenerational learning”. When it comes to the application of those policies, community-based projects can address the issues of access to equipment and learning about new technologies, while offering possibilities for social inclusion and participation of older adults into their communities. Moreover, the co-operation between organisations and corporate agents can solve the issue of cost and limited access of seniors to new technologies. Lastly, educational approaches such as peer-learning and intergenerational learning with ICTs can contribute to greater digital inclusion of older adults and increase digital literacy among this group.

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