Patrício, Maria Raquel; Osório, António

Intergenerational learning with ICT: a case study

Studia paedagogica. 2016, vol. 21, iss. 2, pp. [83]-99

ISSN 1803-7437 (print); ISSN 2336-4521 (online)

Stable URL (DOI): https://doi.org/10.5817/SP2016-2-6
Stable URL (handle): https://hdl.handle.net/11222.digilib/135504
Access Date: 27. 11. 2024
Version: 20220831

Studia paedagogica
vol. 21, n. 2, 2016
www.studiapaedagogica.cz
DOI: 10.5817/SP2016-2-6

INTERGENERATIONAL LEARNING WITH ICT: A CASE STUDY

MARIA RAQUEL PATRÍCIO, ANTÓNIO OSÓRIO

Abstract

In a context of rapid demographic and technological changes, digital skills are essential in order for citizens to actively participate in society. However, digital literacy for all citizens, especially for the older population, is not yet a reality. It is increasingly crucial for active ageing, lifelong learning, and life-wide learning that the elderly learn digital skills. Intergenerational learning can play a key role in achieving a wide range of goals. This paper focuses on the contribution of intergenerational learning to digital and social inclusion. We promoted ICT intergenerational workshops and chose the case study methodology to study three distinct cases of intergenerational learning with ICT. The results show that intergenerational learning with ICT contributes to the digital literacy of adults and seniors and fosters lifelong learning, active ageing, and understanding and solidarity among generations. We reveal the benefits of the intergenerational learning process for all participants and suggest some ways to achieve intergenerational learning through ICT in order to build more socially and digitally cohesive societies.

Keywords

intergenerational learning, ICT, digital literacy, non-formal learning, lifelong learning

Introduction

Contemporary society has witnessed significant transformations in all economic, social, political, familial, cultural, and demographic structures. These transformations demand understanding, and adapting to, a new vision to support economic growth, social inclusion, civic and active participation, family ties, and generational relations. Education is one of the main pillars of society and the most suitable tool to help deal with the challenges of these transformations. Because of the ageing population phenomenon in Europe and in many countries of the world, the importance of lifelong learning is increasing. Education has a significant role in improving the quality of life and the well-being of the older population by increasing social networks and social support, influencing social solidarity, and fostering economic development (Albertini, 2007; Bar & Russel, 2006; Henkin, 2007). In the same way, intergenerational learning contributes to community and financial cohesion, civic engagement, and intergenerational interactions in relation to late-life learning.

Following the European Year for Active Ageing and Solidarity between Generations in 2012, there have been important discussions on ageing policies and on the need to strengthen intergenerational solidarity and develop opportunities for cooperation and learning between generations. Intergenerational learning is essential for fostering positive relations among people of different ages and life situations and for supporting the transmission and exchange of human capital, life skills, culture, values, and knowledge within society (Bachmann & Säävälä, 2012).

In this context, a coalition of stakeholders launched the *Manifesto for an Age-Friendly European Union by 2020*, aimed at "fostering solidarity between generations and enabling the active participation and involvement of all age groups in society while providing them with adequate support and protection" (2012). According to this EY2012 Manifesto, promoting age-friendly environments is one effective approach for responding to demographic ageing; we believe that the best response is to empower older people to learn in an intergenerational context to acquire new skills, i.e. digital competences and knowledge, in order to access lifelong learning and to be able to participate in the increasingly technologized ICT society.

This paper presents an overview of intergenerational learning followed by an analysis of digital literacy. Next, the study and its methodological options are presented. The text concludes by revealing the benefits of the intergenerational learning process for all generations and suggesting some ways to achieve intergenerational learning through ICT for building more socially and digitally cohesive societies.

Intergenerational learning

"The traditional contract between the generations is based on a system of intergenerational reciprocity" (Harper & Hamblin, 2014, p. 7). Typically, intergenerational learning has been familial. As old as mankind, intergenerational learning within families means the "systematic transfer of knowledge, skills, competencies, norms and values between generations" (Hoff, 2007, p. 126).

In the last century, the impact of demographic and social changes contributed to the development of a new extra-familial intergenerational paradigm –Intergenerational Programs–which emerged "as social planning models designed to fill the 'geographic gap' by connecting older and younger persons in formal settings that promoted intergenerational exchange and intergenerational learning" (Newman & Hatton-Yeo, 2008, p. 32).

Intergenerational learning is an interactive process between and among people from different generations whereby one or both partners learn. Intergenerational learning contributes to strengthening intergenerational relations, reducing barriers, and breaking negative stereotypes between generations (Ropes, 2011; Spannring, 2008).

The new challenges in ageing societies have highlighted the importance of intergenerational learning in social contexts in which people are working towards a common goal, thereby giving rise to another intergenerational learning paradigm: social capital (Newman & Hatton-Yeo, 2008). The relation between learning and social capital can be defined as follows:

> *Social capital treats learning not as a matter of individual acquisition of skills and knowledge, but as a function of identifiable social relationships. It also draws attention to the role of norms and values in the motivation to learn as well as in the motivation to learn as the acquisition of skills and the deployment of know how.* (Field & Schuller, 1997, p. 17)

The consideration of intergenerational learning also raises the issue of ensuring that all generations are able to benefit from the learning process, towards common goals. Interpretations of social capital and learning require contemplation of new frameworks that support and encourage societies to empower intergenerational and lifelong learning, education, and skills updating, especially digital literacy, to live in the knowledge society of the 21st century.

Digital literacy

ICT has been developing very rapidly and has become an integral part of everyday life for many people. The potential offered by ICT for enhancing life quality and benefiting people for greater democratic and societal engagement is widely acknowledged. However, competence in digital literacy is fundamental.

To learn in the knowledge society, to understand, to critically and reliably assess digital media and content, and to effectively communicate across multiple digital contexts, digital skills are required. In accordance with the EU Skills Panorama:

> Digital competences involve confident and critical use of information society technology (ICT) in the general population and provide the necessary context (i.e. the knowledge, skills and attitudes) for working, living and learning in the knowledge society. Digital competences are defined as the ability to access digital media and ICT, to understand and critically evaluate different aspects of digital media and media contents and to communicate effectively in a variety of ICT influenced contexts. (*Glossary – Digital Competences (ICT Skills)*, 2014)

Digital literacy and skills have become a precondition for growth and employment in a digital economy, as well as for social inclusion in health, education, and the community. Therefore, it is fundamental to extend digital literacy benefits to the entire population, including adults and the elderly. According to Risi (2009), learning digital skills decreases the digital divide for adults and the elderly, while providing benefits linked to independent and healthy living, active ageing, citizenship, and social inclusion. Risi asserts that acquiring digital skills can, in turn, lead to participation in other learning activities (such as online courses) and other jobs.

The Digital Agenda for Europe, one of the seven flagship initiatives of Europe 2020, defines the key role of ICT, underlining the relevance of supporting individuals, especially older people, in learning to use ICT, especially computers (*Communication from the Commission to the European Parliament*, 2010). Moreover, the European Commission (*Annex 2: Grundtvig Project Analysis and Compendium*, 2012) notes the importance of the role of ICT in lifelong learning and its positive implications for different generations. The Programme for the International Assessment of Adult Competencies (PIAAC) reveals that in many countries, much of the population has no experience with the use of, or lacks the basic skills needed to use, ICT for many daily tasks (*OECD Skills Outlook 2013*, 2013).

The European Commission, in the document "ICT for Seniors and Intergenerational Learning," assumes that ICT use is a privileged means of learning while creating benefits among different generations and bringing together young and old to bridge the digital divide (*ICT for Seniors and*

Intergenerational Learning, 2012). In fact, when considering the need to increase the digital literacy and skills of older people, it is important to highlight the support of their family, youth, and friends. Older people who had help in the use of technology, the internet, and the web are the most motivated (Wolfinbarger, Gilly, & Schau, 2005). Likewise, the user experience improves the adoption of new media (Fisk, Rogers, Charness, Czaja, & Sharit, 2004). Recent research (Fricke et al., 2013; Kaplan et al., 2013) shows that intergenerational learning has significant potential to develop lifelong learning programs with ICT in order to make ICT more accessible and to allow all people to discover the benefits of using ICT.

ICT intergenerational workshops

In this section, we present a study conducted with the aim of exploring the contribution of intergenerational learning to digital and social inclusion, and to the promotion of greater communication, support, understanding, and solidarity between generations. This research consisted of the study, between 2011 and 2013, of three distinct cases of intergenerational learning with ICT involving different generations (children, youth, adults, and seniors) in intergenerational learning activities for the acquisition and development of digital skills.

Information technology for grandchildren and grandparents

In July 2011, we conducted the first study of three ICT workshops: one for grandparents, one for grandchildren, and another for an intergenerational group. These workshops aimed to promote the connection between grandchildren and grandparents through ICT and family cohesion. The workshops provided skills in basic ICT, internet security, and the use of e-mail and web tools for communication and interaction. The contents were changed and adapted to the characteristics, interests, needs, and abilities of participants. The workshop directed at grandparents and adults over the age of 50 was the first: eight participants focused on general ICT concepts, word processing use, e-mail, and the internet. The second workshop was targeted at eight grandchildren and children, aged from 6 to 12 years; it addressed notions of ICT, drawing programs, word processing, e-mail, and internet and web security. The activities were organized in groups, and individual exercises were practiced on computer programs. The intergenerational workshop was attended by fourteen learners (9 adults and 5 children/youth) of diverse ages (4 to 63 years). This workshop explored ICT skills (word processing, electronic presentations, and web navigation and searching) related to work produced in arts and crafts activities by the participants.

Intergenerational ICT workshop with young and older adults

The second study ran from April to July 2012 and involved different generations, higher education students and older adults, in ICT-supported activities. The workshop objectives were to promote intergenerational learning through ICT and cooperation between youth and seniors in digital skills, to encourage the sharing of experiences and knowledge, and to contribute to digital inclusion and participation of the senior population in the community and knowledge society. The intergenerational workshops had three groups of ten older adults and eight students each, oriented by an ICT lecturer. The activities took place once a week for ninety minutes. The learning process ran in a non-formal context adapted to the older adults' interests and needs. They participated and were involved in the process of learning and developing their own digital skills and abilities. They also shared their knowledge and life experiences with the younger generation. The students provided support and shared their digital competences and experiences according to the requests and preferences of the older participants.

Intergenerational ICT workshop with adults and older

The third case of intergenerational learning with ICT took place over a period of eight months (November 2012 to June 2013) in a non-formal and informal learning context, with a group of adults and older people, on the use of social networks. The purpose of the workshop was to promote digital literacy and lifelong learning through intergenerational learning and social networks. Participants in this workshop included 20 adults and older people, aged from 45 to 84 years.

Methodology

This research consisted of a multiple case study intended to understand the phenomena and processes inherent to the problem under investigation. The case study methodology is holistic and includes a thorough analysis of a phenomenon developed in a real and complex context. The richness of the information derived from case studies contributes to a deep and detailed understanding of real-life interactions, with an emphasis on the context. According to Stake (1999), the holistic nature of case studies leads to a greater concentration overall, enabling an understanding of the phenomenon as a whole rather than in terms of its features or of differentiation from other cases. For Yin (2005), conducting case studies in order to understand complex social phenomena in contextual conditions may be relevant in research.

This multiple case study (Bogdan & Biklen, 1994; Yin, 2005) focused on three cases, three contexts, and three groups of participants, with the intention of studying and understanding them in their uniqueness. Multiple cases contribute to a more convincing study (Yin, 2005). The study of three concrete and different situations allowed us to identify similarities and differences, enabling the understanding of the phenomenon as a whole. This case study is also collective (Stake, 2005), because we followed cases that could be compared, allowing the deeper knowledge of a real situation: intergenerational learning with ICT.

To complement and triangulate data, we opted to combine the multiple data sources through quantitative and qualitative methods, with greater emphasis on the qualitative method. Both the qualitative and quantitative method are used so as to complement each other (Flick, 2004; Yin, 2005). The data collection instruments were diverse and selected with consideration of the study involved (Table 1).

Table 1
Data collection instruments for study

Study	Data collection instruments				
	Surveys by question-naire	Interviews	Focus groups	Participant observation	Researcher diary
Information technology for grandchildren and grandparents		✓		✓	✓
Intergenerational ICT workshop with younger and older adults	✓	✓	✓	✓	✓
Intergenerational ICT workshops with adults and older adults	✓	✓	✓	✓	✓

Multiple data sources were used with the aim of reducing or minimizing any divergences resulting from the data collection and corroboration of that fact in order to increase the accuracy and consistency of the information. The data process and analysis was performed through content, descriptive and statistical analysis, crossing the data to ensure consistency. For data analysis, we defined categories of analysis from the various data collection instruments.

Analysis and Discussion

In this section, we present an analysis and discussion of the results based on the categories of analysis developed in order to understand the case studies of intergenerational learning with ICT. The categories of analysis were created with consideration for the diversity and specificity of the materials studied, collected, and processed during our investigation. The analysis categories resulted either from the studies themselves, involving a component of personal reflection in the analysis of perspectives, or from the literature review. In the definition of the analysis categories, topics emerging from the literature were also considered. Other topics that later emerged while interpreting the data through content analysis were also considered as subcategories. Table 2 presents the categories and subcategories of analysis.

Table 2
Analysis of categories and subcategories

Categories	Subcategories
ICT	Skills and use
	Motivations and needs
	Problems in ICT use
Intergenerational learning	Dynamic interactions between participants and ICT
	Learning contexts
	Intergenerational relations

We proceed with the analysis of the categories and subcategories with consideration for the theoretical framework and data collected.

ICT

This category highlights the dimension that ICT represented in the lives of the participants, including skills and use, motivation and needs, and problems in ICT use. Digital literacy is a key skill because it is needed in all areas of contemporary society (Karpati, 2011).

Skills and ICT use

We found that the majority of the elderly in case study 1 did not have ICT skills and therefore they did not use ICT. The children had basic ICT skills and used new technologies. In case study 2, we verified that the majority of adults and older participants had no ICT skills. As one participant suggested: "*I know nothing, I know nothing .... I am very afraid of spoiling it all or ...*

doing anything wrong" (Mrs. A, 75 years, July 18, 2011). The participants who had these abilities used ICT to communicate, to search for information, and to find news. In case study 3, the participants had basic ICT skills (online communication and the ability to search for information and use computer programs such as Word or Paint). One of the participants told us: "*I've talked to my son on the computer, I can see his picture*" (Mrs. B, 65 years, May 30, 2012). Inadequate skills and infrequent ICT use by adults and the elderly result from lack of training, lack of access to technological resources, and lack of understanding of the benefits of technology. These findings are confirmed by scientific studies highlighting the sociodemographic factors that determine the use of ICT for the older population (Selwyn et al., 2003).

Motivations and needs

Older people need training, support and motivation to start using ICT (*Active Ageing and the Potential of ICT for Learning*, 2008; *Assessment of the Senior Market for ICT Progress and Development*, 2008; *Bridging Research in Ageing and ICT Development,* 2012; *Council Conclusions of 22 May 2008 on Adult Learning,* 2008; *ICT & Ageing*, 2009; *ICT Enabled Independent Living for Elderly,* 2010; *Older People, Technology and Community* 2010; *Overview of the European Strategy in ICT for Ageing Well Information Society and Media*, 2009).

We found that the majority of the participants in the three case studies were motivated and showed interest in ICT use, which they need particularly to communicate and interact with family and friends, and also to be updated and participate actively in the digital society:

> *I need to know other things for my hobby... to search the internet for the work I have to do. And it's great to see a lot of information there... to work in all this ... I have to learn, have to learn ... that's why I'm here to learn.* (Mrs. C, 68 years, May 2, 2012)

However, we identified some participants, particularly in the first case study, who felt no need to use ICT in their daily lives because of a lack of time and interest. Thus, it is important to develop non-formal and informal learning opportunities that enable the exchange of intergenerational experiences, promoting motivation and increasing ICT use by older adults. The knowledge and technological experiences of younger people, associated with the attention and help provided to older adults, contributed in the same way to the motivation and involvement in developing digital and communication skills. One of the participants described her experience in the following way:

> *Here we have the help of the girls. They already know more than we do... all right there but we'll go slowly with your help. So we will soon solve any problem or mistake we make.* (Mrs. D, 65 years, May 16, 2012)

If the motivational process is appropriate, older adults become receptive to learning and ICT use. Continuing the analysis, motivation and the need to use ICT were closely linked with social and family life, especially for generational interactions.

Problems in ICT use

In the literature review, we found various factors that determine the non-use of ICT by older people, including learning difficulties, lack of confidence, technophobia, and problems with technology and accessibility interfaces (Czaja & Lee, 2007; Keates & Clarkson, 2003). Lack of time and support for learning are also barriers to ICT use (Charness et al., 2001).

The main difficulties experienced by participants, including the elderly, were technological demystification, accessibility (information display on the screen and handling the mouse and keyboard) and cognitive skills (lack of concentration, attention, and memory and mental tiredness). One of the participants shared with us the following experience: "*To me it is hard to see the letters on the screen ... it seems that they move ... if they were a little bigger it would be better*" (Mrs. E, 77 years, July 18, 2011). While another suggested: "*It's hard to walk with this thing... the mouse, right*?" (Ms. X, 66 years, July 19, 2011).

Other obstacles mentioned included the lack of computer equipment and internet access in their homes, the limited allocation of public places with free access to computers, high costs, limited time, little or no experience in ICT use, lack of practice, and some forgetfulness or difficulty in remembering some practices. One participant said: "*I have two or three computers... they do not work and also I do not have internet*" (Mr. Y, 71 years, April 11, 2012). Another claimed: "*I like the technology but the problem is to fit it in my head. It is a bit difficult*" (Mr. Y, 71 years, May 2, 2012). While it was also proposed that: "*The internet is a little expensive*" (Mrs. I, 57 years, April 18, 2013). The analysis also shows that the continued and adapted use of technology, curiosity and motivation of the participants, and the encouragement of the younger generation all contribute to the dissipation of these issues and promote interest in new technologies.

Intergenerational learning

In this category, we analyse the importance of intergenerational learning with ICT for participants.

Dynamic interactions between participants and ICT

In relation to the interactions between the participants and ICT, it was quite evident that it is possible to strengthen social and family ties and to promote

mutual sharing of experiences and knowledge between generations through flexible learning environments. In addition, both generations demonstrated fulfilment in intergenerational learning with ICT, not only in the opportunity to acquire digital skills but also in the recognition of the benefits of intergenerational activities. The intergenerational interaction was very important for the adults and seniors because they felt more confident and secure using ICT with the interaction and support of younger generations. One participant claimed: "*It's never too late to learn and I start to become enthusiastic and I really like to learn the new technologies that the web offers us*" (Mrs. M, 63 years, May 31, 2013). Another suggested: "*The exchange of knowledge is the basis of human progress*" (Mr. Y, 71 years, June 28, 2013). This dimension was equally appreciated by the younger generations, because they learned a great deal from the life experiences and knowledge of the older people.

It emerged that the affective, emotional, and social aspects have sufficient influence over the dynamics of interaction among participants and therefore on the adoption of new technologies (Fisk et al., 2004; Wolfinbarger et al., 2005).

Learning contexts

Intergenerational learning with ICT in non-formal and informal contexts was important for the involvement and participation of adults and older people. We created a friendly and familial environment in the groups, allowing involvement in the learning process and intervening with ideas and suggestions in response to their expectations, needs, and interests in ICT use. One participant suggested: "*In a group it is easier because we learn from each other*" (Mrs. C, 68 years, June 28, 2013). Another claimed: "*I found a problem that alone I would never solve. It is the beginning of a long journey*" (Mr. Y, 71 years, June 28, 2013). It was also said by another participant: "*With each other we learn more, each with their experience*" (Mrs. J, 62 years, June 28, 2013). Finally, a participant also commented: "*It's more fun, more sociable, the people in this... playful setting we learn more*" (Mr. Z, 52 years, June 28, 2013).

These intergenerational workshops developed in a flexible, cooperative, and collaborative learning environment among different generations, which enabled the digital inclusion of adults and seniors and contact with the younger generations. The workshops also enabled young people to acquire new knowledge (traditions, customs, values, cooking, crafts, music, etc.) and experiences, and to develop social, relational, communication, and digital skills.

Intergenerational Relation

This subcategory highlights the importance placed by the participants on the coexistence of different generations, whether of a familial or social nature, through the mutual sharing of experiences and knowledge.

It is clear that intergenerational relations are very important for adults and seniors, not only for enhancing social skills, self-esteem, and overall well-being, but also for the emotional connection that can be generated among all generations. A participant said: "*We are a family! We have good and bad moments*" (Mrs. H, 58 years, May 17, 2013). Another participant suggested: "*It's been a good experience in various ways, to make friends with colleagues*" (Mrs. G, 60 years, June 28, 2013).

Young generations value intergenerational relationships, noting the need to combat age discrimination, to build a social and family environment of respect, to understand and cooperate among all generations, and to facilitate the digital inclusion of older people. As a participant suggested: "*It's not like the old times... before, there was more respect for our elders... their wisdom was appreciated by all, we became socialized and learned a lot from them*" (Student 1, 21 years, March 7, 2012).

Ageism is a serious problem in Portuguese society. Marques (2011) notes that "the promotion of intergenerational activities that increase opportunities for positive contact between older people and other age groups is very important to decrease ageist attitudes" (p. 97).

Conclusions

In this paper, we presented three distinct cases of intergenerational learning with ICT. These case studies demonstrated that adults and seniors are receptive to ICT learning, within a context of non-formal and informal learning, when they feel the need and motivation for ICT and are encouraged to use it. The interaction with younger generations is an interesting and useful mode of supporting learning for older people. Intergenerational learning with ICT contributes to the digital literacy of adults and seniors, and it fosters lifelong learning, active ageing, and solidarity and understanding among generations (Ala-Mutka, Malanowski, Punie, & Cabrera, 2008; *Draft Council Resolution on a Renewed European Agenda for Adult Learning – Adoption*, 2011; Wermundsen, 2007; *What is Intergenerational Learning?*, 2015).

The positive effects of the interaction with other generations allows individuals of any generation to participate in building a more tolerant and unified society; to change their own vision of the other generations; to improve relational, communicative, and social skills; to boost self-esteem and identity construction; and to increase life experiences (Dupont & Letesson, 2010).

With this research, we identified various benefits of intergenerational learning with ICT for older and younger generations. Adults and the elderly showed a greater involvement in the community and willingness to achieve friendships and transmit knowledge and experiences with those of different

generations; increased self-esteem, happiness, and optimism in life; fewer feelings of loneliness and isolation; the development of new skills, especially digital and relationship skills. In the younger people, there were positive feelings and attitudes towards older generations, such as respect and solidarity; an increased sense of social responsibility; improved communication, interactive, creative, and digital skills; and personal satisfaction.

This study illustrates how non-formal learning opportunities through intergenerational initiatives can contribute to well-being, to supporting the assessment of life experiences and skills, to increased understanding between generations, and to a positive impact on intergenerational relations, reducing or eliminating the risk of generational conflict. Analysis and reflection on this study, which involved different contexts and participants, enabled the identification of interesting practices promoting intergenerational learning with ICT. It was rather evident that the promotion of social network uses, through possible intergenerational learning with ICT, provides an environment of interaction, sharing, communication, and positive collaboration in acquiring digital skills, and is an effective intergenerational learning environment for digital and social inclusion. It is about *intergenerational engagement* – the full range of ways in which younger and older people interact, support, and provide care for one another (Kaplan, 2002).

The study also led to important findings about the contribution of intergenerational learning to effective ICT use by adults and seniors and the role that social networking and sharing between generations can play in enhancing lifelong learning, intergenerational solidarity, and active ageing. As one of the participants claimed:

> *No doubt social networks contributed to significantly increasing my interest to learn more; if not for this project, I would not have been able to discover it myself. The professor and students are always ready to help to enrich our knowledge. I hope this project continues, because I still have a lot to learn. I would like to continue to learn more.* (Mrs. G, 60 years, June 28, 2013)

We should emphasize that learning must be enjoyable and relevant to the learner and appropriate to any particular difficulties that may arise, and that those difficulties must be overcome with learning strategies adjusted to the group and to each individual, as has been done throughout our study.

With regard to good practices for intergenerational learning with ICT, there are some themes that we introduced successfully and others that were recommended by our participants: the celebration of commemorative and meaningful days, such as birthdays, local festivities, and popular traditions, by the participants; sharing life stories, traditions, and popular culture; cultural tours and leisure activities; exchanges of recipes and crafts; organizing refreshments, etc. Another good practice is to start intergenerational activities

with relaxing moments of conversation and the exchange of information and news. Conviviality, dialogue, sharing experiences, doubts, problems, and curiosities, was a moment at the beginning of each session that was appreciated by the participants. We highlight that social, cultural, and affective aspects are powerful elements for involving the generations in learning activities with ICT. Similarly, several authors (Ainscow, 2000; Bond et al., 2001; Katz & Rice, 2002; Lansdale, 2002; Leung & Lee, 2005; Neves & Amaro, 2012; Rice & Katz, 2003; Swindell, 2000; Xie, 2008) mention the huge potential of ICT in improving the quality of life of older people.

An intergenerational program ought to be created and negotiated among all those who can be involved, respecting their interests, desires, motivations, and needs. Shared learning for all participants, providing a more intense and effective learning, has to be ensured. The design of lifelong and intergenerational learning available for an ageing society requires the understanding that learning is a universal right for everyone, and it is important to take into consideration the complex social dimensions of the population and their interests, needs, motivations, and circumstances, and to see diversity as an opportunity.

We highlight a perspective of intergenerational learning focused on personal, cultural, and social aspects of life. In order to provide better opportunities for all generations to learn together, we suggest the inclusion of alternative scenarios (and non-formal, informal, and even formal contexts; in academic, professional, social, and personal practice; in different types of interactions, such as virtual, mobile, and indoor and outdoor activities) and subjects (languages, arts, storytelling, games, new technologies, and social and digital media) for learning. When social media and new technologies support intergenerational activities, the learning process is more creative, stimulating, and expressive.

Intergenerational learning has much to contribute to the ageing and education debate on building societies that have high social capital and place value on civic engagement, solidarity, and participation. We need a global educational and social policy to emphasize the importance of intergenerational learning for a successful and sustainable economy, promote the active ageing and lifelong learning of all citizens, and foster intergenerational cohesion by addressing social and digital engagement.

References

Ainscow, M. (2000). The next step for special education: Supporting the development of inclusive practices. *British Journal of Special Education*, *27*(2), 76–80.

Ala-Mutka, K., Malanowski, N., Punie, Y., & Cabrera, M. (2008). *Active Ageing and the Potential of ICT for Learning.* Luxembourg: Office for Official Publications of the European Communities.

Albertini, M. (2007). Le reti di sostegno economico e di cura degli anziani poveri. Il caso italiano e uno sguardo all'Europa. In A. Brandolini & C. Saraceno (Eds.), *Povertà e benessere. Una geografia delle disuguaglianze in Italia* (351-376). Bologna: il Mulino.

Annex 2: Grundtvig Project Analysis and Compendium – Active Ageing and Intergenerational Learning. (2012). Brussels: European Commission.

Assessment of the Senior Market for ICT Progress and Development. (2008). Brussels: European Commission.

Bachmann, D., & Säävälä, T. (2012). *2012 the European Year for Active Aging and Solidarity between Generations – Solidarity and Attitudes.* (Online only) Retrieved from http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/536344/EPRS_IDA(2015)536344_EN.pdf

Barr, F. M., & Russell, C. A. (2006). Social capital – A potential tool for analysis of the relationship between ageing individuals and their social environment. *Ageing International, 31*(3), 203–216.

Bogdan, R., & Biklen, S. (1994). *Investigação Qualitativa em Educação: Uma Introdução à Teoria e aos Métodos.* Porto: Porto Ed.

Bond, G. E., Wolf-Wilets, V., Fiedler, F. E., & Burr, R. L. (2001). Computer-aided cognitive training of the aged: A pilot study. *Clinical Gerontologist*, *22*(2),19–42.

Executive summary of the BRAID project – Bridging Research in Ageing and Information and Communication Technology Development, June 2012. (2012). (Online only) Retrieved from http://ec.europa.eu/information_society/newsroom/cf/dae/itemdetail.cfm?item_id=8239&newsletter=107

Charness, N., Kelley, C. L., Bosman, E. A., & Mottram, M. (2001). Word processing training and retraining: Effects of adult age, experience and interface. *Psychology and Aging*, *16*(1), 110–127.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A Digital Agenda for Europe. (2010). Brussels: European Commission.

Council Conclusions of 22 May 2008 on Adult Learning. (2008). Official Journal of the European Union.

Czaja, S. J., & Lee, C. C. (2007). The impact of aging on access to technology. *Universal Access in the Information Society*, *5*(4), 341–349.

Draft Council Resolution on a Renewed European Agenda for Adult Learning – Adoption. (2011). Brussels: Council of the European Union.

Dupont, C., & Letesson, M. (2010). *Comment développer une action intergénérationnelle?* Brussels: De Boeck.

Field, J., & Schuller, T. (1998). Social capital, human capital and the learning society. *International Journal of Lifelong Education*, *17*(4), 226–235.

Flick, U. (2004). *Introducción a la investigación cualitativa.* Madrid: Ed. Morata.

Fricke, A., Marley, M., Morton, A., & Thomé, J. (2013). *The Mix@ges Experience: How to Promote Intergenerational Bonding through Creative Digital Media.* Remscheid: Mixages. Retrieved from https://issuu.com/ibk-kubia/docs/manual_mixages_web

Fisk, A. D., Rogers, W. A., Charness, N., Czaja, S. J., & Sharit, J. (2004). *Designing for Older Adults: Principles and Creative Human Factors Approaches*. New York: CRC Press LLC.

Glossary – Digital Competences (ICT Skills). (2014). Brussels: European Commission. Retrieved from http://euskillspanorama.cedefop.europa.eu/Glossary/default.aspx?letter=D

Harper, S., & Hamblin, K. (Ed.) (2014). *International Handbook on Ageing and Public Policy*. Cheltenham: Edward Elgar Publishing.

Henkin, N. Z. (2007). Communities for all ages: A practical model. In M. Sánchez & D. M. Butts et al. (Eds.), *Intergenerational programmes. Towards a society forall ages* (147–166). Barcelona: The "la Caixa" Foundation.

Hoff, A. (2007) Intergenerational learning as an adaptation strategy in ageing knowledge societies. In *Education, Employment, Europe* (126–129). Warsaw: National Contact Point for Research Programmes of the European Union.

ICT & Ageing: Users, Markets and Technologies. International Expert Workshop European RTD in the Field of ICT & Ageing: Lessons Learned & Issues for the Future. (2009). Brussels: European Commission.

ICT Enabled Independent Living for Elderly – A Status-quo Analysis on Products and the Research Landscape in the Field of Ambient Assisted Living (AAL) in EU-27. (2010). Berlin: Institute for Innovation and Technology.

ICT for Seniors' and Intergenerational Learning. Projects funded through the Lifelong Learning Programme from 2008 to 2011. (2012). Brussels: Education, Audiovisual & Culture Executive Agency.

Kaplan, M. (2002) Intergenerational programs in schools: Considerations of form and function. *International Review of Education*, *48*(5), 305–334.

Kaplan, M., Sánchez, M., Shelton, C., & Bradley, L. (2013). *Using Technology to Connect Generations*. Pennsylvania State University & Washington DC: Generations United.

Karpati, A. (2011). *Digital Literacy in Education*. Moscow: UNESCO Institute for Information Technologies in Education.

Katz, J. E., & Rice, R. E. (2002). Project syntopia: Social consequences of internet use. *IT & Society*, *1*(1), 166–179.

Keates, S., & Clarkson, J. (2003). Design Exclusion. In J. Clarkson, R. Coleman, S. Keates, & C. Lebbon (Eds.) *Inclusive Design: Design for the Whole Population* (88–102). London: Springer.

Lansdale, D. (2002). Touching lives: Opening doors for elders in retirement communities through email and the internet. In R.W. Morrel (Ed.), *Older Adults, Health Information, and the World Wide Web* (133–151). Mahwah: Lawrence Erlbaum Associates.

Leung, L., & Lee, P. S. N. (2005). Multiple determinants of life quality: The roles of Internet activities, use of new media, social support, and leisure activities. *Telematics and Informatics, 22*(3), 161–180.

Manifesto for an Age-Friendly European Union by 2020. (2011). European Year for Active Ageing and Solidarity between Generations (Online only) Retrieved from http://www.age-platform.eu/images/stories/23598_poster_everyone2012_v4.pdf

Marques, S. (2011). *Discriminação da terceira idade*. Lisboa: Relógio D'Água Editores.

Neves, B. B., & Amaro, F. (2012). Too old for technology? How the elderly of Lisbon use and perceive ICT. *The Journal of Community Informatics*, *8*(1).

Newman, S., & Hatton-Yeo, A. (2008). Intergenerational learning and the contributions of older people. *Ageing Horizons*, *8*(10), 31–39.

OECD Skills Outlook 2013: First Results from the Survey of Adult Skills. (2013). Paris: OECD Publishing.

Older People, Technology and Community – the Potential of Technology to Help Older People Renew or Develop Social Contacts and to Actively Engage in their Communities. (2010). London: Calouste Gulbenkian Foundation.

Overview of the European Strategy in ICT for Ageing Well Information Society and Media – ICT for Inclusion. (2009). Brussels: European Commission.

Rice, R. E., & Katz, J. E. (2003). Comparing internet and mobile phone usage: Digital divides of usage, adoption, and dropouts. *Telecommunications Policy*, *27*(1), 597–623.

Risi, E. (2009). Learning against aging. Training opportunities for the elderly to learn new technologies. *European Papers in New Welfare*, *13*(1), 74–89.

Ropes, D. C. (2011). Intergenerational learning in organisations – A research framework. In *Working and Ageing: Guidance and Counselling for Mature Learners* (105–123). Luxembourg: Publications Office of the European Union.

Selwyn, N., Gorard, S., Furlong, J., & Madden, L. (2003). Older adults' use of information and communications technology in everyday life. *Ageing & Society*, *23*(5), 561–582.

Spannring, R. (2008). *Intergenerational Learning in Organisations: Literature report.* Innsbruck: University Innsbruck. Retrieved from http://www.iglooproject.eu/files/igloo_literature_report_final_eng.pdf

Stake, R. (1999). *Investigación con estudio de casos.* Madrid: Ed. Morata.

Stake, R. (2005). *Investigación con estudio de casos.* Madrid: Ed. Morata.

Swindell, R. (2000). Using the internet to build bridges to isolated older people. *Australasian Journal on Ageing*, *19*(1), 38–40.

Wermundsen, T. (Ed.) (2007). *EAGLE Desk Research Synthesis Report – Intergenerational Learning in Europe Policies, Programmes & Initiatives.* Erlangen: University of Erlangen-Nuremberg. Retrieved from http://www.inger.gob.mx/bibliotecageriatria/acervo/pdf/A_10_Intergenerational_Learning_Europe_Revised.pdf

What is Intergenerational Learning? (2015). Stoke on Trent: European Map of Intergenerational Learning. Retrieved from http://www.emil-network.eu/what-is-intergenerational-learning/

Wolfinbarger, M., Gilly, M. C., & Schau, H. J. (2005). *Keeping up with the Times: Innovation and Usage of the Internet Among Later Adopters.* Berkeley: Center for Research on Information Technology and Organizations.

Xie, B. (2008). Multimodal Computer-Mediated Communication and Social Support Among Older Chinese Internet users. *Journal of Computer-Mediated Communication*, *13*(3), 728–750.

Yin, R. K. (2005). *Estudo de Caso: Planejamento e Métodos.* Porto Alegre: Bookman.

Corresponding authors

Maria Raquel Patrício
Polytechnic Institute of Bragança, Portugal
E-mail: raquel@ipb.pt

António Osório
University of Minho, Portugal
E-mail: ajosorio@ie.uminho.pt